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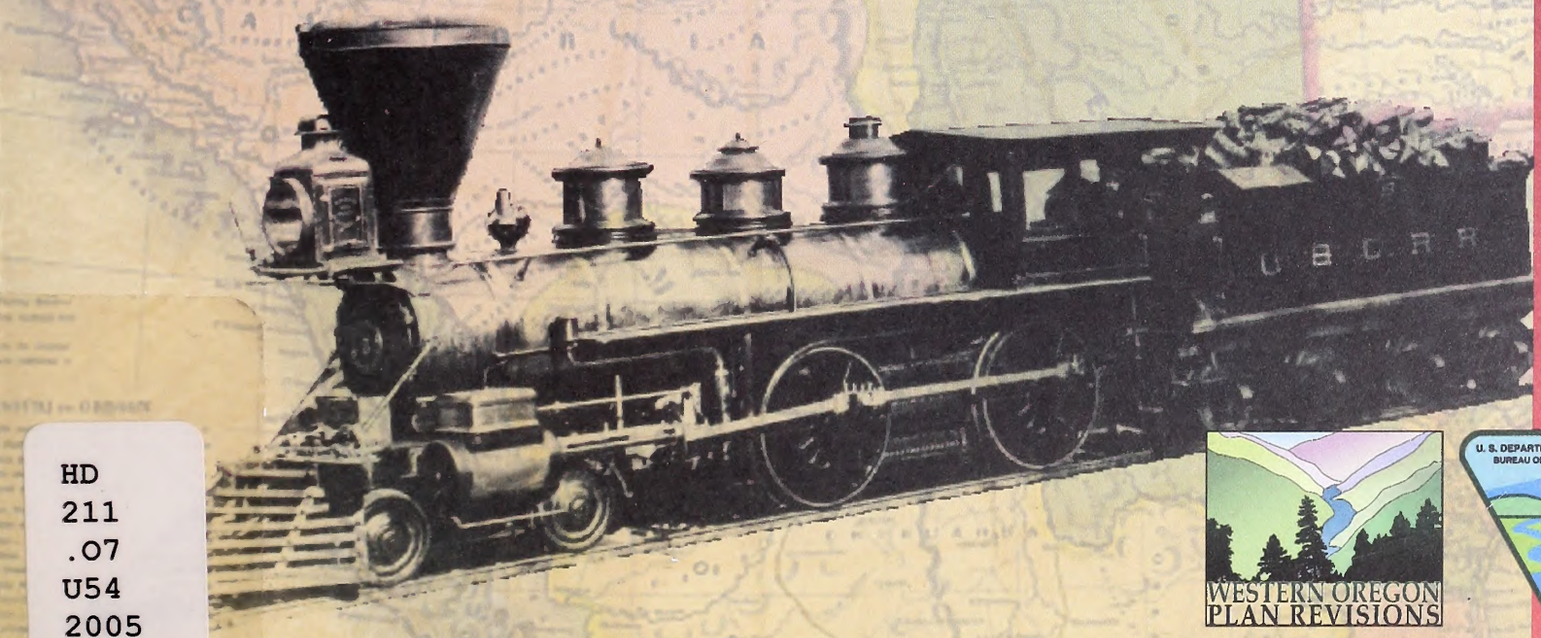
Western Oregon Plan Revisions

Analysis of the Management Situation



BLM

Salem, Eugene, Roseburg, Coos Bay, Medford, and Klamath Falls Offices

October 2005

WESTERN OREGON PLAN REVISIONS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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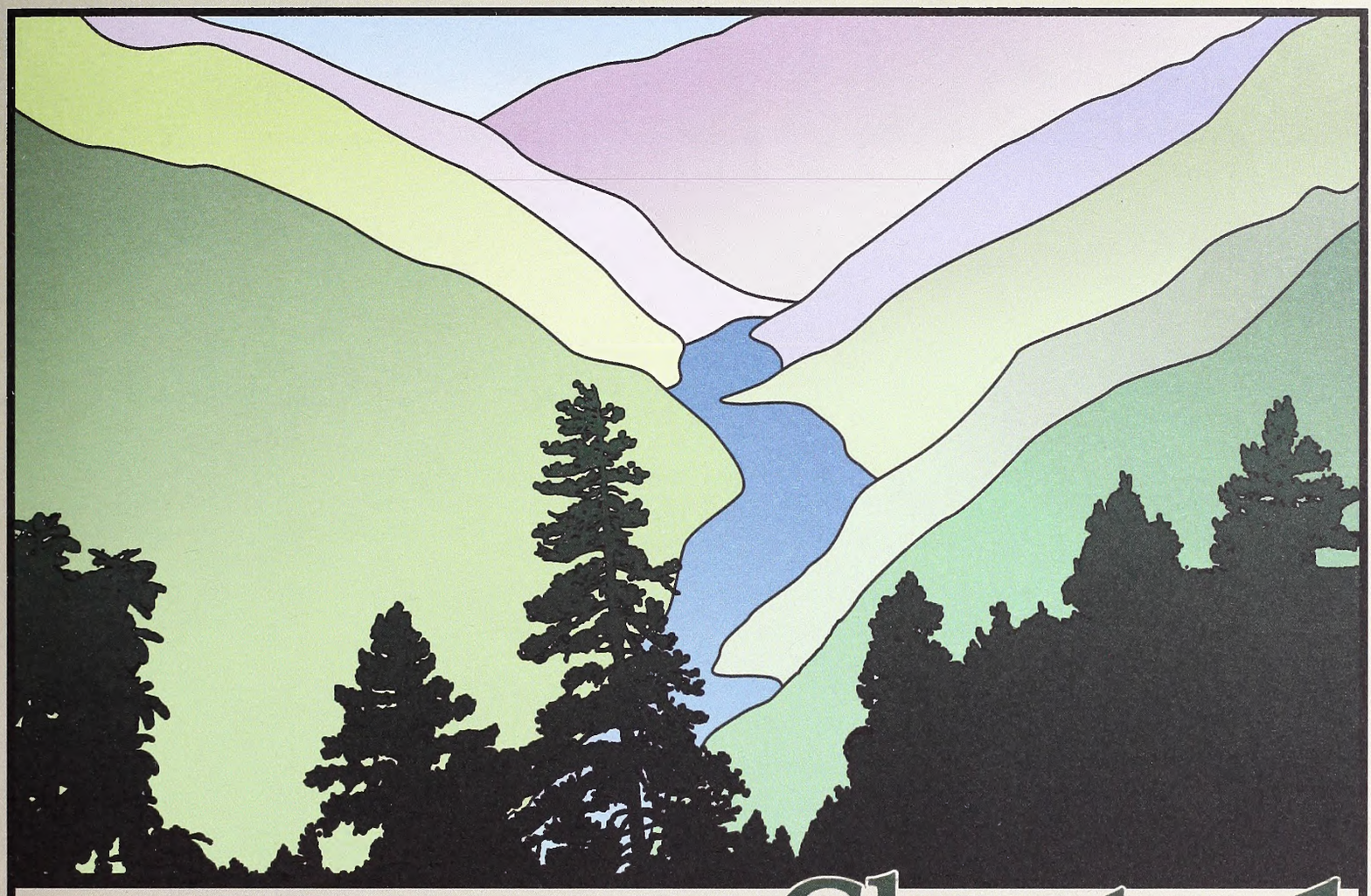


Chapter 1
Introduction

Introduction

Purpose of the Analysis of the Management Situation

- Determine the ability of the western Oregon districts and Klamath Falls field office to respond to identified issues and opportunities.

- Provide, consistent with multiple use principles, the basis of formulating reasonable alternatives

How the Analysis of the Management Situation Accomplishes Its Purpose

- The analysis of the management situation is a brief document that provides condensed information* used by managers in developing alternatives for analysis in the resource management plan.

- The information in the analysis of the management situation is intended to be concise and to the point.

- Although the analysis of the management situation may be distributed to the general public, its focus and main audience is the managers involved in the RMP process.

- Because of its intended audience, the analysis of the management situation does not provide the level of background information and definitions that will be included in the RMP environmental impact statement.

- Because of its intended purpose, the analysis of the management situation is not a detailed compilation of information regarding resources, programs and issues in the planning area.

- The analysis of the management situation is not a National Environmental Policy Act document although the RMP process of which it is a part is subject to the National Environmental Policy Act.

- In addition to its use in assisting managers to formulate alternatives, the analysis of the management situation may contain information relevant to the subsequent development of the affected environment chapter in the RMP environmental impact statement.

Other very important information used in developing alternatives is the information received from the public during scoping.

How the Analysis of the Management Situation Fits Within the Overall Resource Management Plan Process

BLM resource management planning process consists of nine steps which, in some instances, may overlap each other:

1. Identification of issues
2. Development of planning criteria and State Director Guidance
3. Inventory data and information collection
4. Analysis of the management situation
5. Formulation of alternatives
6. Estimation of effects of alternatives
7. Selection of preferred alternative
8. Selection of resource management plan
9. Monitoring and evaluation

General Description of Planning Area, Resources and Programs

Planning Area Description

The planning area includes public lands and resources managed by the Salem, Eugene, Roseburg, Medford, and Coos Bay Districts and a portion of the lands managed by the Lakeview district's Klamath Falls field office (Map 1). The planning area includes approximately 2,557,700 acres of public land.

Relationship of the Planning Area to the Northwest Forest Plan

The 1994 Final SEIS and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl is commonly referred to as the Northwest Forest Plan. Land Management Plans for individual National Forests and BLM Districts (including the six Districts in the Planning Area) west of the Cascade Range mountains in Washington, Oregon, and Northern California have incorporated the management direction contained in the Northwest Forest Plan. Only a portion of the Northwest Forest Plan area in western Oregon falls within the planning area (Figure 1).

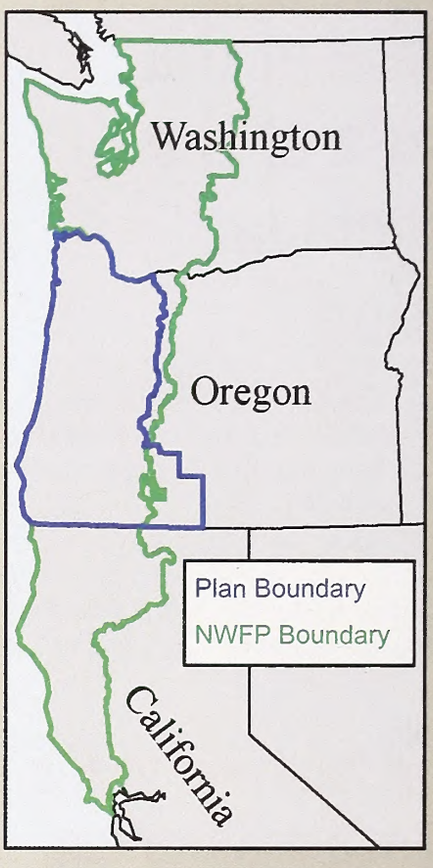


Figure 1- Northwest Forest Plan (NWFP) area and the Western Oregon Plan Revisions area

- ***The Northwest Forest Plan covers approximately 24 million acres of federal forest lands in the Pacific Northwest***
- ***BLM lands in Western Oregon cover 2.5 million acres***

The Northwest Forest Plan was designed to respond to multiple needs, the two primary ones being the need for forest habitat and the need for forest products.

The Northwest Forest Plan was designed to both maintain the late-successional and old-growth forest ecosystem and provide a predictable and sustainable supply of timber, recreational opportunities, and other resources.

The Northwest Forest Plan includes land use allocations and standards and guidelines. There are seven land use allocations. Standards and guidelines provide specific management direction for each allocation. The BLM manages a small percentage of the lands covered by the Northwest Forest Plan (Figure 2). However, much of the land the BLM does manage falls within some type of reserve allocation (Figure 3). BLM managed lands in the Coast Range mountains generally contain a higher percentage of reserves than BLM lands in the other physiographic provinces.

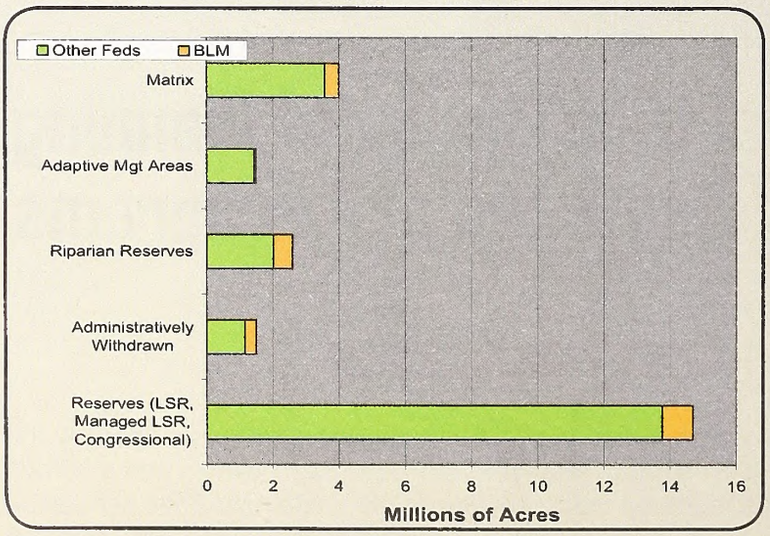


Figure 2- Northwest Forest Plan Land Use Allocations

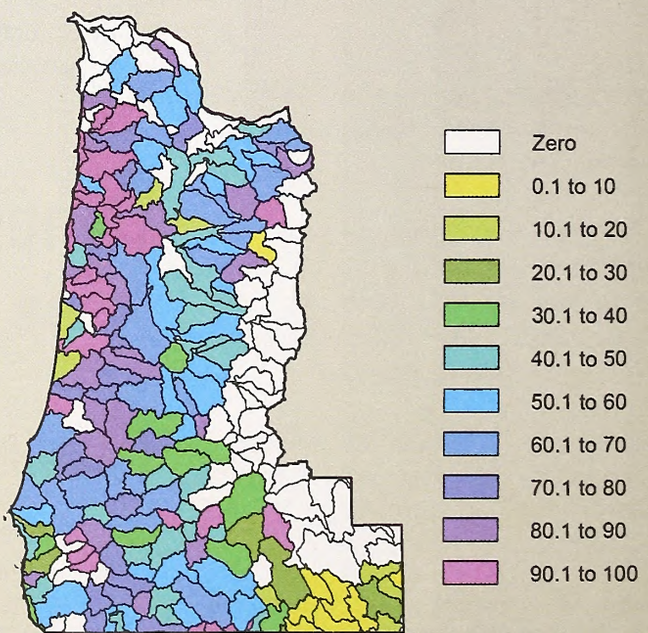
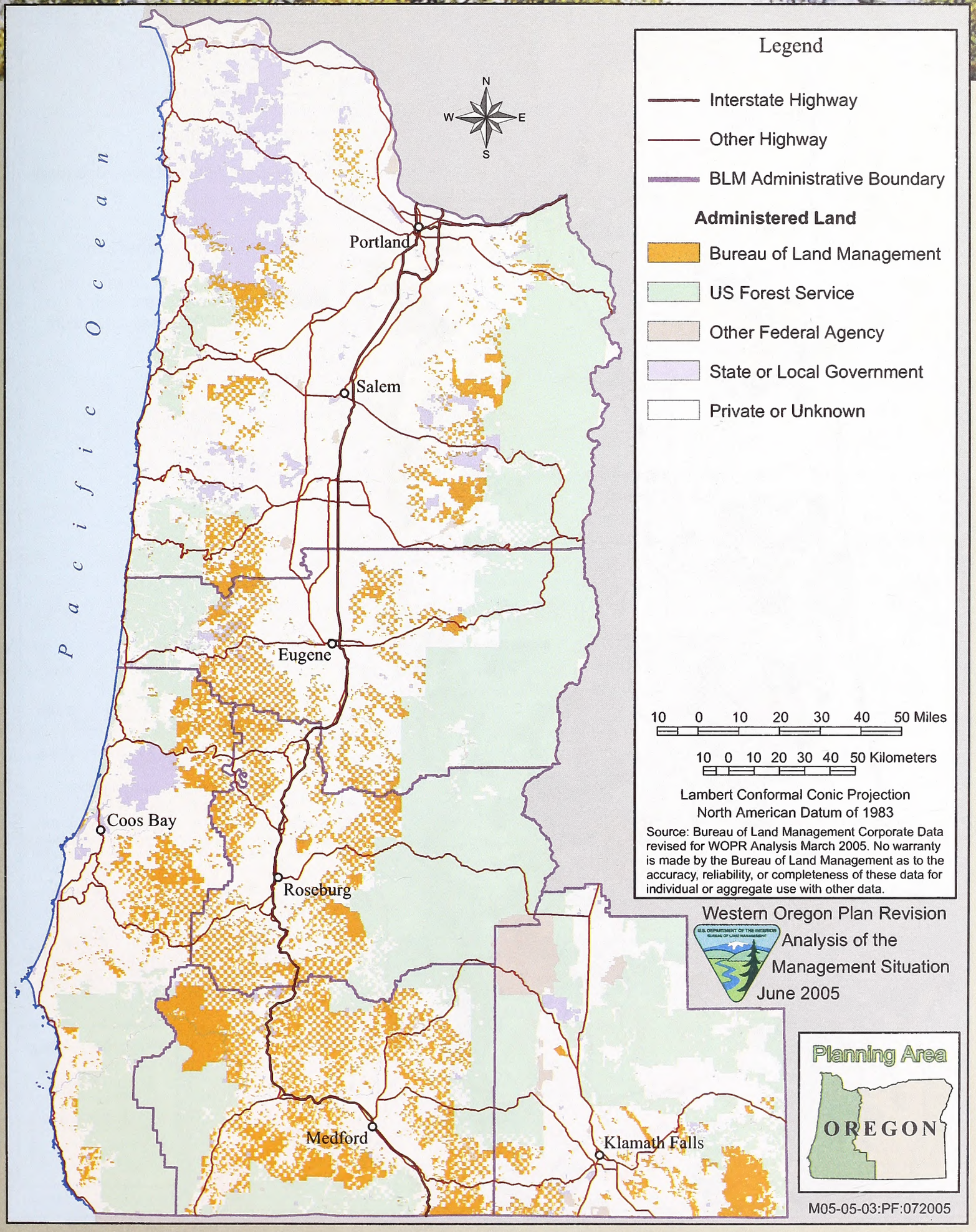
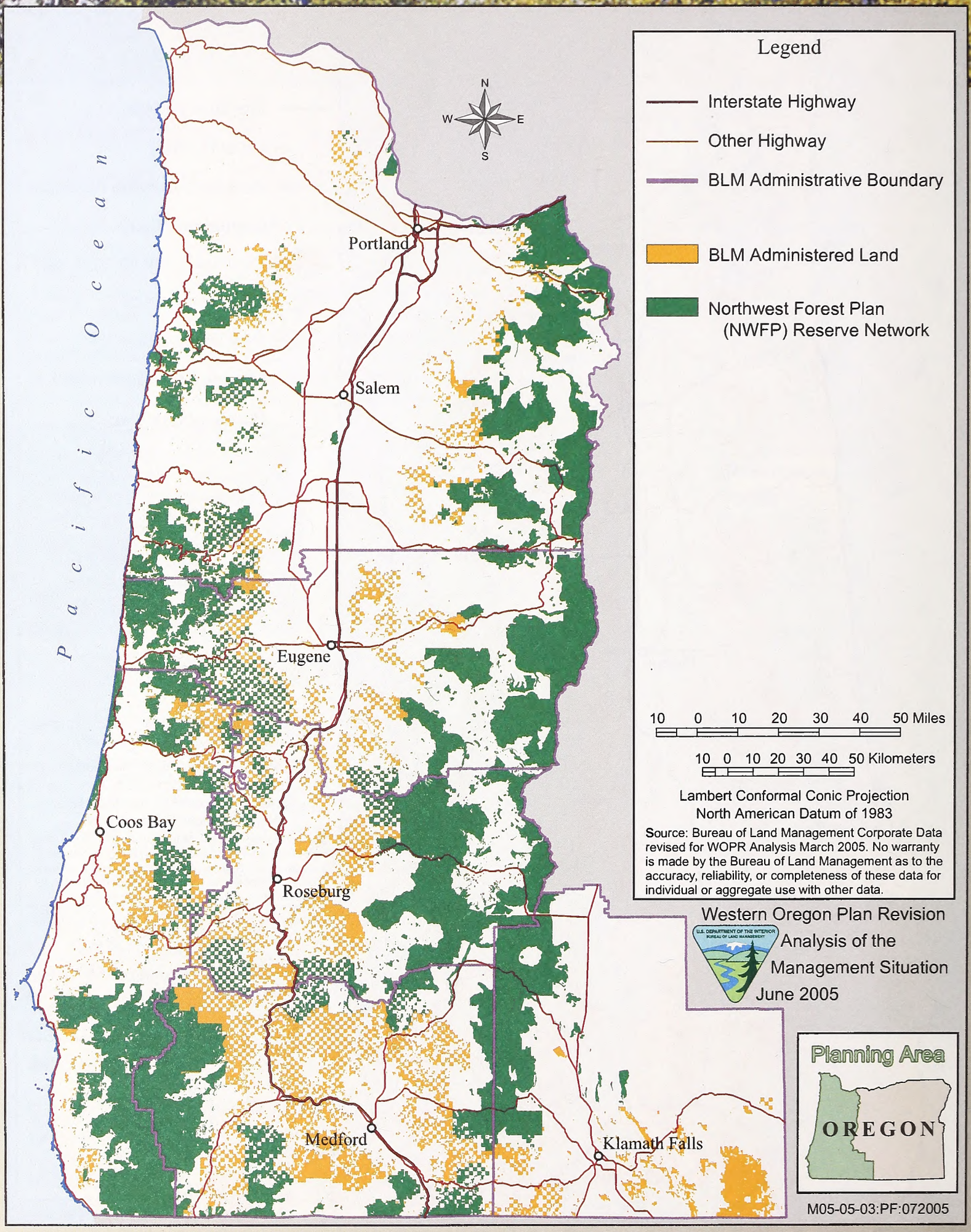


Figure 3- Percent of BLM Lands Reserved by Fifth-Field Watershed



Map 1: Bureau of Land Management Lands in Western Oregon



Map 2: Northwest Forest Plan Forest Reserve Network in Western Oregon

The Northwest Forest Plan created a landscape of large Late-Successional Reserves to maintain a functional, interactive, late-successional and old-growth forest ecosystem (Map 2). They were designed to serve as habitat for late-successional and old-growth related species including the northern spotted owl. At the landscape scale, the BLM manages a small percentage of these large reserves.

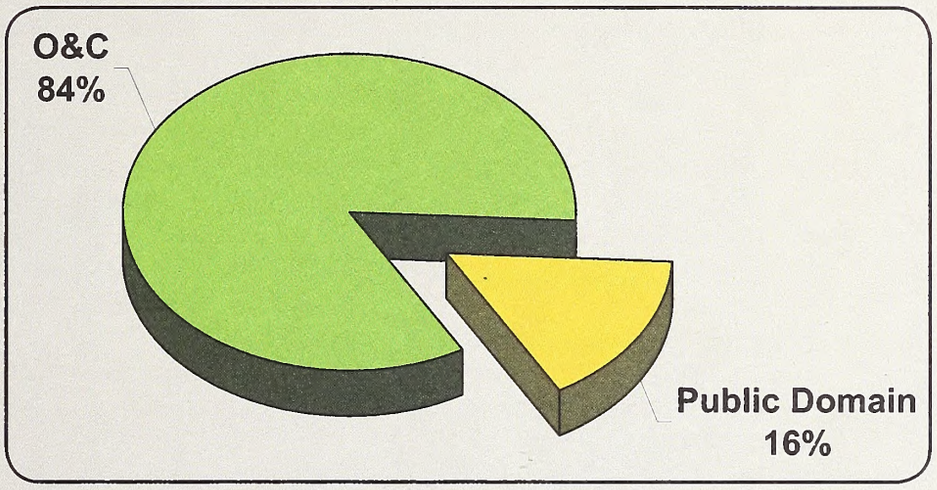
Oregon and California Railroad (O&C) Lands and Public Domain Lands

BLM forest lands in Oregon are administered under two management programs. One is for the O&C and Coos Bay Wagon Road lands in western Oregon. The other is for public domain lands which are mostly in eastern Oregon.

Table 1 and Figure 4 show the amount of BLM surface ownership by source of administrative authority for the planning area.

The Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act) (43 U.S.C. §1181a, et seq.) provides the legal authority for the management of O&C lands. The O&C Act requires that the O&C lands be managed "... for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities ..." (43 U.S.C. §1181a).

Figure 4 – BLM Surface Ownership by Legal Authority



Management of the O&C lands must also comply with a variety of other laws including the Clean Water Act, the Endangered Species Act and the National Environmental Policy Act.

The legal mandate for Public Domain lands is the Federal Land Policy and Management Act of 1976. These lands and resources are to be managed under the principles of multiple use and sustained yield.

Significant to this planning process is the settlement of litigation in the lawsuit American Forest Resource Council v. BLM. The major issues revolved around the alleged inappropriate application of reserves and

Table 1 – Legal Status of BLM-administered Lands in Western Oregon (Acres)

District	O&C and Coos Bay Wagon Road Lands	Public Domain	Acquired*	Total
Salem	349,300	51,600	2,100	403,000
Eugene	304,200	10,500	400	315,100
Coos Bay	279,400	41,800	1,500	322,600
Roseburg	406,500	19,800	0	426,300
Medford	764,900	96,100	4,800	865,800
Klamath Falls	46,900	174,800	3,200	224,900
Total	2,151,200	394,600	12,000	2,557,700

**Federal lands acquired by purchase or donation under an authorization other than Federal Land Policy and Management Act.*

The Oregon and California Railroad grant lands, commonly called the O&C lands, came into existence shortly after the Civil War. In 1866, Congress authorized specific lands in the State of Oregon for the construction of a railroad from Portland, Oregon, southward to the California border near Ashland. Once the railroad was built, some of the lands were to be sold to the public, allowing the railroads to recoup their investment costs. After the railroad companies violated the rules governing how the lands were to be sold, Congress passed the O&C Revestment Act in 1916. This law returned the 2.9 million acres of unsold O&C grant lands in Oregon to Federal ownership. Active Federal management of the Oregon O&C lands began with the passage of the O&C Act of August 28, 1937. This law provides the authority for management of O&C lands along with Coos Bay Wagon Road lands.

wildlife viability standards to Oregon and California Railroad lands (O&C lands). The Secretary of Agriculture, the Secretary of the Interior, the American Forest Resource Council, and the Association of O&C Counties signed a settlement agreement regarding this lawsuit in August of 2003. One part of the settlement agreement is specific to the BLM:

Contingent on funding, the BLM commits to revising its resource management plans for its Coos Bay, Eugene, Lakeview, Medford, Roseburg, and Salem Districts, by 2008, and to consider in such revisions an alternative which will not create any reserves on O&C lands except as required to avoid jeopardy under the Endangered Species Act. All plan revisions shall be consistent with the O&C Act as interpreted by the 9th Circuit Court of Appeals.

Land Ownership Patterns, Data, and Natural Resource Management

Generally, O&C land is located in the odd-numbered sections and private land is located in the even-numbered sections. Thus the lands that the BLM manages in Western Oregon are highly fragmented. As shown in Map 1, the O&C lands retain the original "checkerboard" character.

Activities on adjacent private lands have implications for management of the Federal Lands. The BLM typically manages only a small percentage of the land in any particular fifth field watershed while in many cases the cumulative actions across all ownerships determine resource outcomes.

In the Coast Range mountains, checkerboard ownership (private and BLM) is spread across the entire watershed.

In the western Cascades, checkerboard ownership is mostly in the lower part of watersheds with blocked Forest Service ownership in the headwater areas.

Since the 1980's, the BLM has continually refined and updated its data and geographic information system so that the RMP revision uses one of the most up to date and sophisticated geographic information systems in use by a land management agency.

Hydrology and fish attributes have been recorded and linked to stream segments based on stream surveys and fisheries biologist observations.

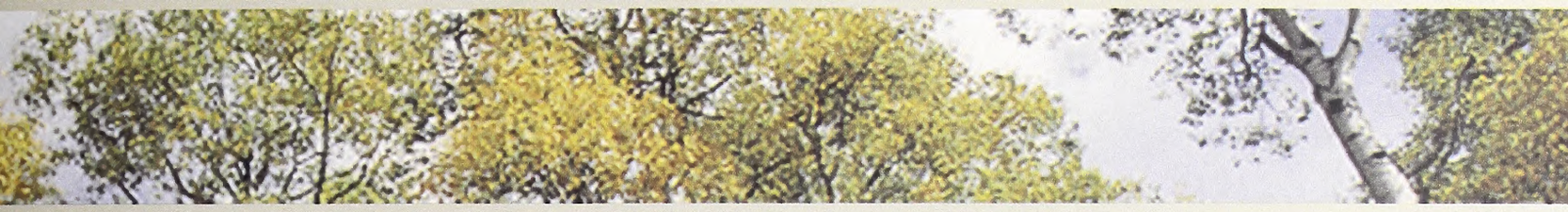
Road attributes have been recorded for those roads that are on BLM land or where BLM right-of-way agreements have been identified.

The focus of the western Oregon digital database effort was to capture forest vegetation, management units, roads, hydrology, elevation, ownership, and a wide range of wildlife habitat information including known northern spotted owl sites on BLM administered lands.

The dark green areas in the adjacent images represent forest stands in a broad range of sizes, species and age classes. The areas in brown represent harvest units, some of which are very recent, while others are young planted plantations. Since ownership and management activities are intermingled across the checkerboard, forest health, wildlife habitat and watershed function are affected by both BLM's actions and the actions of its neighbors.

The planning team has chosen to express many natural resources facts and statistics based on fifth field watersheds (Figure 5). There are 258 fifth field watersheds which average 87,000 acres in size located all or in-part within the planning area. Fifth-field watersheds provide a useful scale for assessing watershed health, forest health, water quality and salmonid survival

The BLM in western Oregon is rarely the predominant landowner within a fifth field watershed. Over half of BLM lands are located in fifth field watersheds where BLM lands comprise less than a third of



The western Oregon plan revision database begins with large-scale aerial photography.

The hydrology network of streams and rivers, including intermittent streams, is mapped.

The road network is mapped based on the aerial photography.

Since 1993 the BLM (shown in stipple) has been managing and updating data in this automated information system.

the watershed. As a result of this ownership pattern, the BLM can only partially influence certain outcomes and ecological functions. By contrast, most of the lands managed by the Forest Service are large, contiguous blocks (Figure 6).

Finally, not only are the lands managed by the BLM widely scattered, but they represent only about 11 percent of the planning landscape (Figure 7).

Chapter 2 includes discussions regarding the management implications of this ownership pattern.

Figure 5 – Fifth Field Watersheds

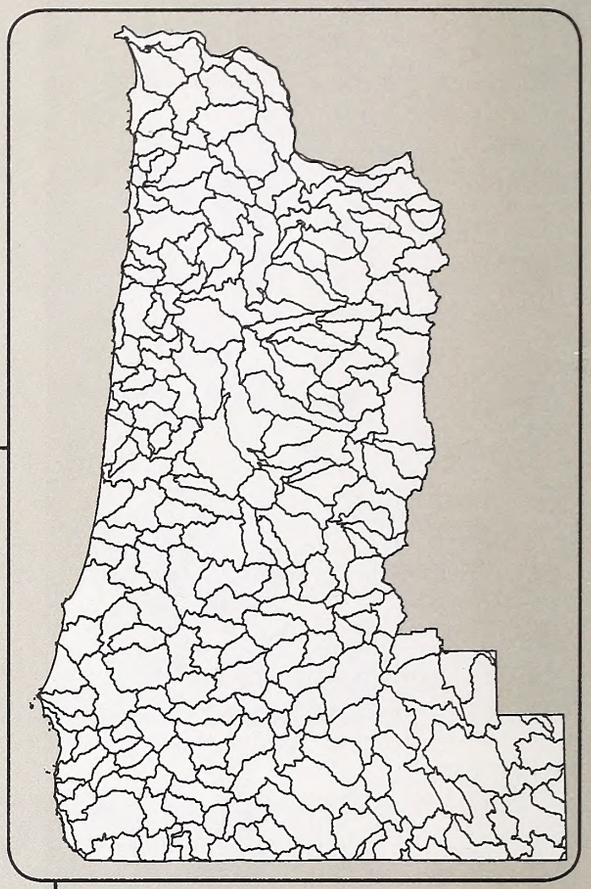


Figure 6 – Ownership as a Watershed Proportion in the Planning Area

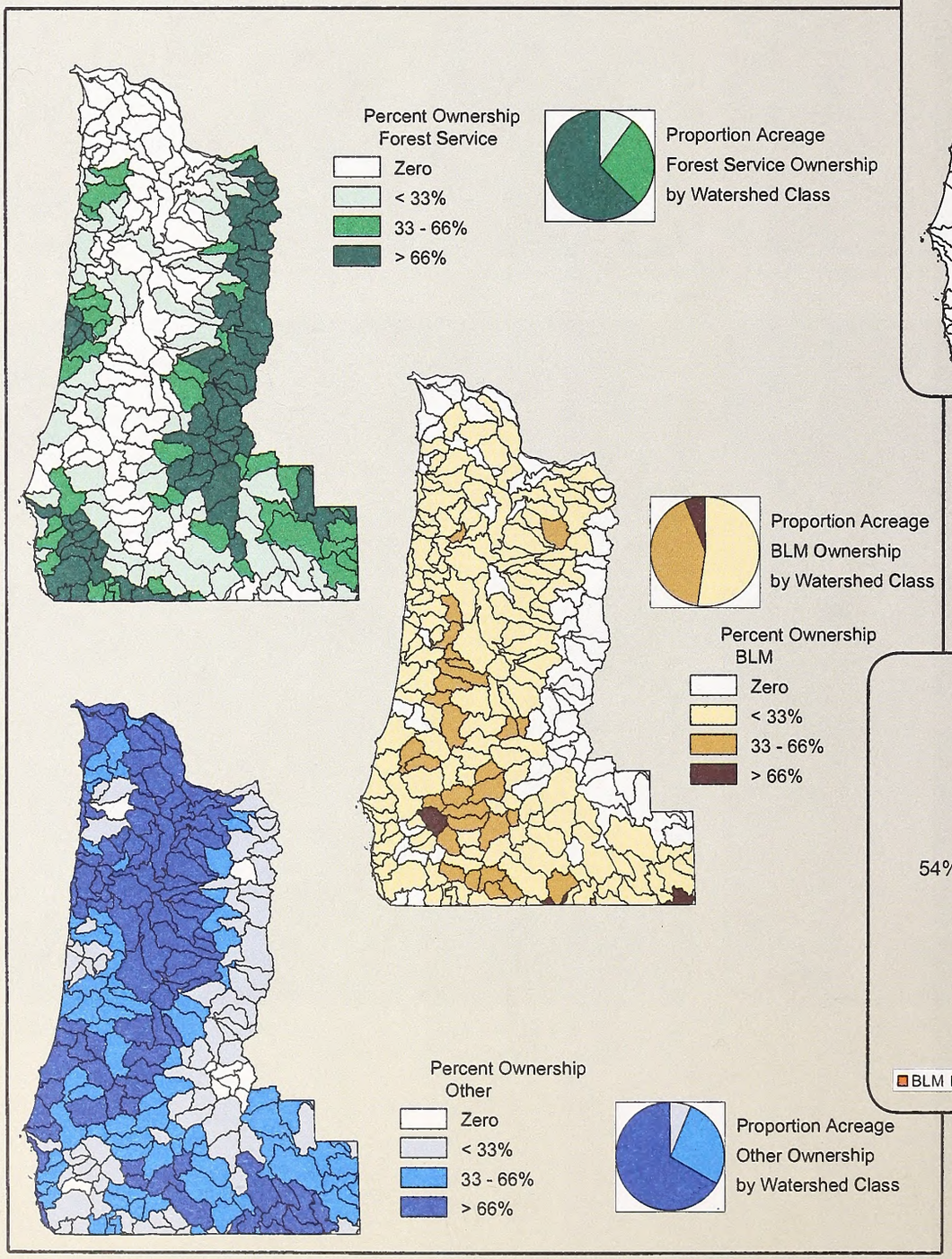
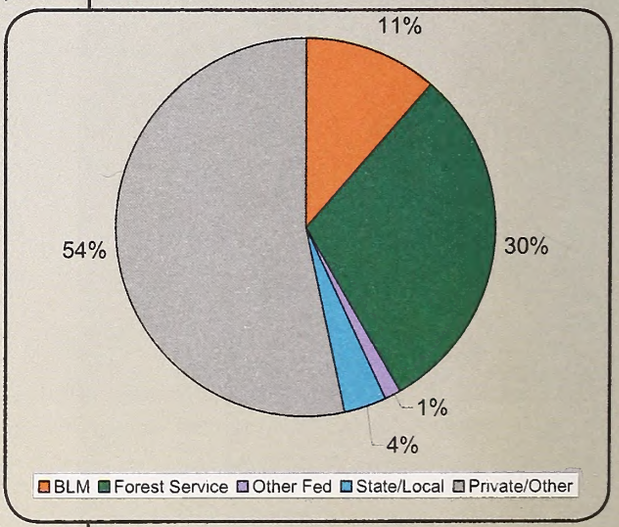


Figure 7 – Proportion of Major Ownership Classes in the Planning Area



Current Management Direction

Relevant Plans and Amendments

Current management direction provided by Resource Management Plans of six westside Oregon BLM offices:

- Salem District
- Eugene District
- Coos Bay District
- Roseburg District
- Medford District
- Klamath Falls Field Office

All six resource management plans:

- high degree of coordination
- very consistent in approach
- completed concurrently
- Records of Decision signed in 1995

Northwest Forest Plan consistency

- Northwest Forest Plan Record of Decision signed in 1994.
- All applicable Northwest Forest Plan land use allocations and standards and guidelines are incorporated into the six RMPs.

There is no single land use plan that is the Northwest Forest Plan. The Northwest Forest Plan is a single strategy that exists in a number of individual land use plans. The Northwest Forest Plan record of decision amended nineteen Forest Service land use plans, nine BLM land use plans and supplemented the six western Oregon BLM draft resource management plans.

There are currently three applicable amendments to the six western Oregon resource management plans. These amendments were interagency and region-wide. They applied to all of the land use plans in the Northwest Forest Plan area as well as the six western Oregon BLM resource management plans.

The three RMP amendments accomplished the following:

- Removed the Survey and Manage standards and guidelines
- Clarified the Aquatic Conservation Strategy standards and guidelines
- Replaced direction for the management of Port Orford cedar.

The records of decision for the three amendments were signed in 2004.

The six western Oregon resource management plans have been annually refined and clarified through plan maintenance.

Management Decisions

Management decisions regarding the establishment of objectives for various resources and programs, land use allocations and management direction in the six plans are very consistent because the six western Oregon resource management plans were completed concurrently and with a high degree of coordination.

RMP objectives are expected to be achieved through the establishment of RMP land use allocations and the implementation of RMP management direction.

The approximate relationship of resource management plan decisions can be roughly expressed by the following equation:

Objectives = land use allocations + management direction

Effectiveness monitoring is the process used to determine if these RMP assumptions are correct.

Many RMP objectives will only be achieved in the long term, i.e., many decades or a century or more. The ability to determine in the short term (ten years or less) if such long terms objectives are being achieved or are likely to be achieved is often limited.

Land use allocations in the six resource management plans consist of:

- Congressionally Reserved Areas - Included in this category are National Parks and Monuments, Wilderness Areas, Wild and Scenic Rivers, National Wildlife Refuges, Department of Defense lands.

- Late Successional Reserves - These reserves are intended to maintain a functional, interactive, late successional and old-growth forest ecosystem.

- Adaptive Management Areas - These areas are designed to develop and test new management approaches to integrate and achieve ecological, economic, and other social and community objectives. A portion of the timber harvest comes from this land.

- Managed Late Successional Areas - These lands are either (1) mapped managed pair areas or (2) unmapped protection buffers. Managed pair areas are delineated for northern spotted owl activity centers known as of January 1994.

- Administratively Withdrawn Areas - These areas are identified in current forest and district plans and include recreational and visual areas, back country, and other areas not scheduled for timber harvest.

- Riparian Reserves - The main purpose of these reserves is to protect the health of the aquatic system and its dependent species; the reserves also provide incidental benefits to upland species.

- Matrix - The matrix is the federal land outside the other six categories of designated areas. It is also the area in which most timber harvest and other silvicultural activities will be conducted. Lands in the Matrix contain all seral stages. Approximately 14% of existing late successional forest in the northwest Forest Plan area is located with the matrix.

Matrix is subdivided between:
- general forest management area
- connectivity/diversity blocks

Matrix in the Medford District is further subdivided:
- northern general forest management area
- southern general forest management area

Matrix in the Klamath Falls Field Office consists only of the southern general forest management land use allocation.

Twenty-four different resources and programs are addressed in the six western Oregon resource management plans. These resources and programs include:

air quality	water and soils	wildlife habitat
fish habitat	special status species	special areas
cultural resources	visual resources	wild & scenic rivers
wilderness	rural interface areas	socio-economic
recreation	timber resources	special forest products
energy and minerals	land tenure	rights of way
access	withdrawals	roads
noxious weeds	hazardous materials	fire/fuels

For each of these resources and programs the resource management plans provide:
- objectives
- land use allocations
- management action/direction

Management direction is consistent among the six resource management plans. The most notable variations apply to the timber resources program of the Medford District and Klamath Falls field office. These variations are intended to address the different physiographic conditions in southwestern Oregon.

The Cascade Siskiyou National Monument (Medford district) and the West Eugene Wetlands (Eugene district) are within the planning area but are subject to an ongoing and independent land use planning process. There are certain areas, such as Areas of Critical Environmental Concern, that have individual plans. These are activity plans that tier to the RMPs and are not separate land use plans.

Geographic Information Systems and Data

The investment by western Oregon BLM in data quality, data management and geographic information systems capability has provided managers and professionals the ability to analyze complex land management issues and scenarios more quickly than ever before.

The tools of land use planning include:
- Natural resources and framework data
- Geographic information system technology
- Customized application for the RMP revision

Background of Western Oregon Geographic Information Systems

For the first 50 years of management of the O&C lands, foresters, surveyors and other professionals made maps, recorded data, conducted analysis and did land use planning by hand.

To support the western Oregon resource management planning effort that was initiated in the mid 1980's, the BLM created an automated geospatial database, known as a Geographic Information System (GIS).

Collaborative efforts in data collection, data standards, and data acquisition among Federal, State and many other partners has resulted in a significant increase in

geospatial data sharing and coordinated data stewardship and reduced costs.

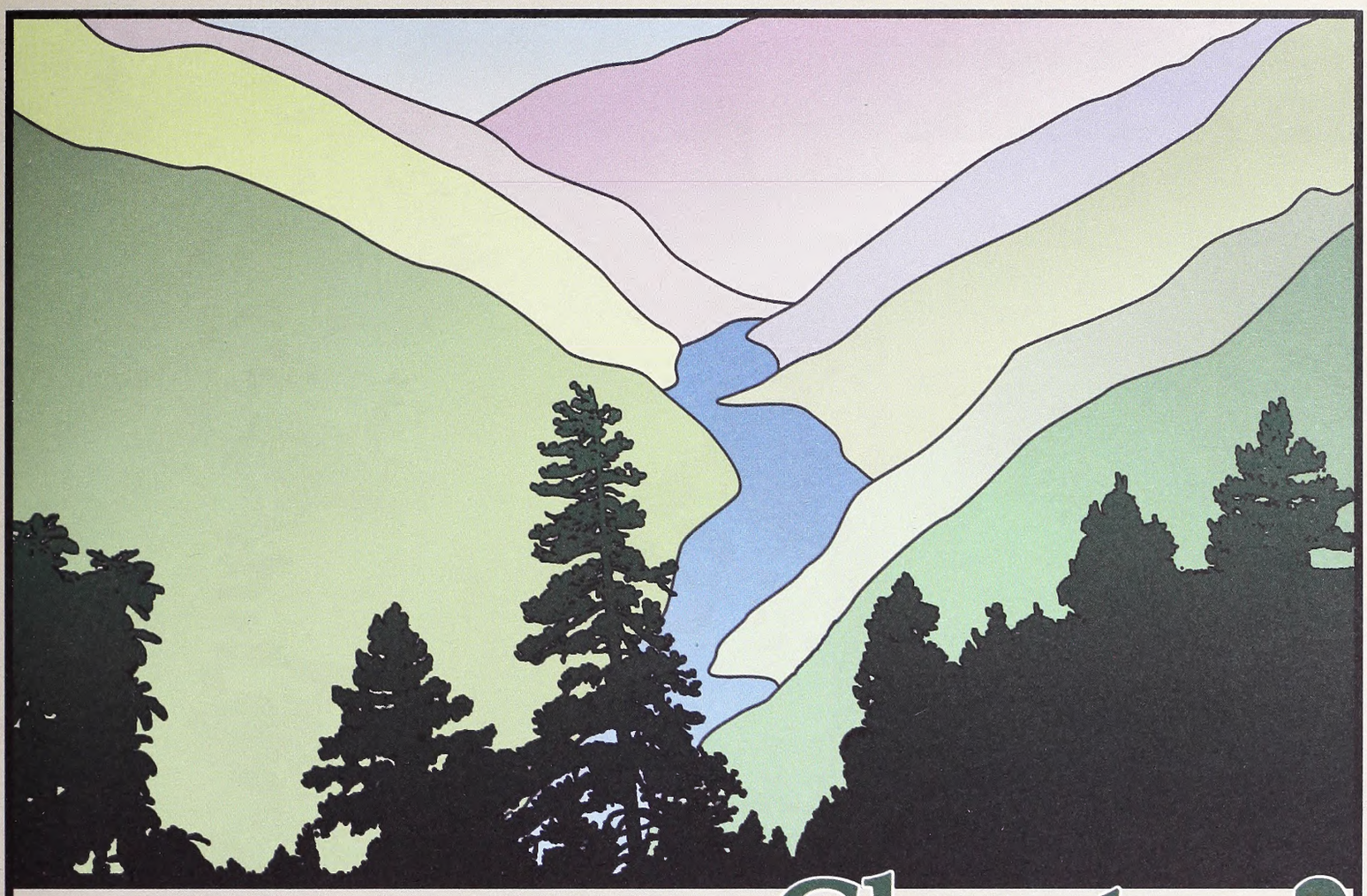
Sources for data which will be used in the RMP revision include the recently completed Northwest Forest Plan Decadal Assessment which generated data that describe environmental conditions across the entire Northwest Forest Plan area.

Because the inventory at the beginning of the planning process is important in determining existing habitat conditions and management options, BLM data is currently being reviewed and updated. The maps, figures and graphics used in the analysis of the management situation are based on data which are maintained by professional foresters, hydrologists, wildlife biologists, botanists, fire ecologists and fish biologists. The use of this data in the analysis of the management situation is part of the quality review of data for the RMP revision.

Key Findings

Following are key findings of the analysis of the management situation related to the preliminary issues identified in the preparation plan. They are drawn from the key points found in chapter two. These findings are highlighted because they are likely to be important considerations in the development of alternatives for the RMP revision.

- Disturbance is essential to how forest ecosystems function. In the absence of natural fire as a disturbance agent, management activities can be designed to partially serve as a surrogate for natural disturbance and change.
- Fire exclusion or passive management results in larger, more severe, and more costly fires.
- Most old-growth forests on BLM lands in western Oregon developed under low and highly variable densities. Young managed forest stands are unlikely to develop similar structure to existing old-growth stands without further management or natural disturbance.
- Thinning can speed development of old-growth forest structure.
- Implementation of silvicultural treatments during the proper phase of forest stand development is critical for attainment of management objectives at the least economic cost.
- Management actions designed to avoid short-term impacts are often unlikely to achieve long-term ecological objectives.
- Choices made in the plan revisions could substantially affect the level of timber harvest and associated contribution to economies in western Oregon.
- Litigation remains a substantial influence affecting the attainment of the timber harvest anticipated under the Northwest Forest Plan, particularly harvest of older timber and fire salvage.
- Rare plant species are not evenly distributed across the landscape. "Hotspots" are areas of high special status species richness and density. These areas provide opportunities to develop focused management strategies.
- BLM's ability to influence outcomes for forest health, wildlife and fisheries habitat, and watershed function varies with ownership patterns, percent ownership, and location of BLM lands in the landscape.
- Although the BLM does not manage the majority of habitat along streams with listed fish, the BLM can target limiting habitat factors for fish populations.
- The RMP revision should be coordinated with recovery plans for threatened and endangered species.
- Existing Riparian Reserves include areas that do not significantly contribute to water quality or flow protection or processes.
- Management direction for off-highway vehicle designations on certain BLM lands in western Oregon needs to be modified to meet the challenges presented by increasing off-highway vehicle use.



Chapter 2
Area Profile

Introduction

This chapter describes the existing condition of the resources, resource uses, and programs related to BLM management. For each resource, the current condition and its context for BLM management at various scales is briefly discussed. In addition, management opportunities are identified which may be considered by managers in formulating alternatives for analysis in the resource management plan revision

The analysis of the management situation is intended to bring issues and opportunities to the attention of managers in a concise manner. Programs and resources that were identified in the eighth year resource management plan evaluation as functioning as anticipated or that were not initially identified as key issues in the preparation plan are addressed in less detail. Although topics are addressed concisely in the analysis of the management situation, those that are carried forward in the RMP revision will be rigorously explored and objectively evaluated, as appropriate, in the environmental impact statement.

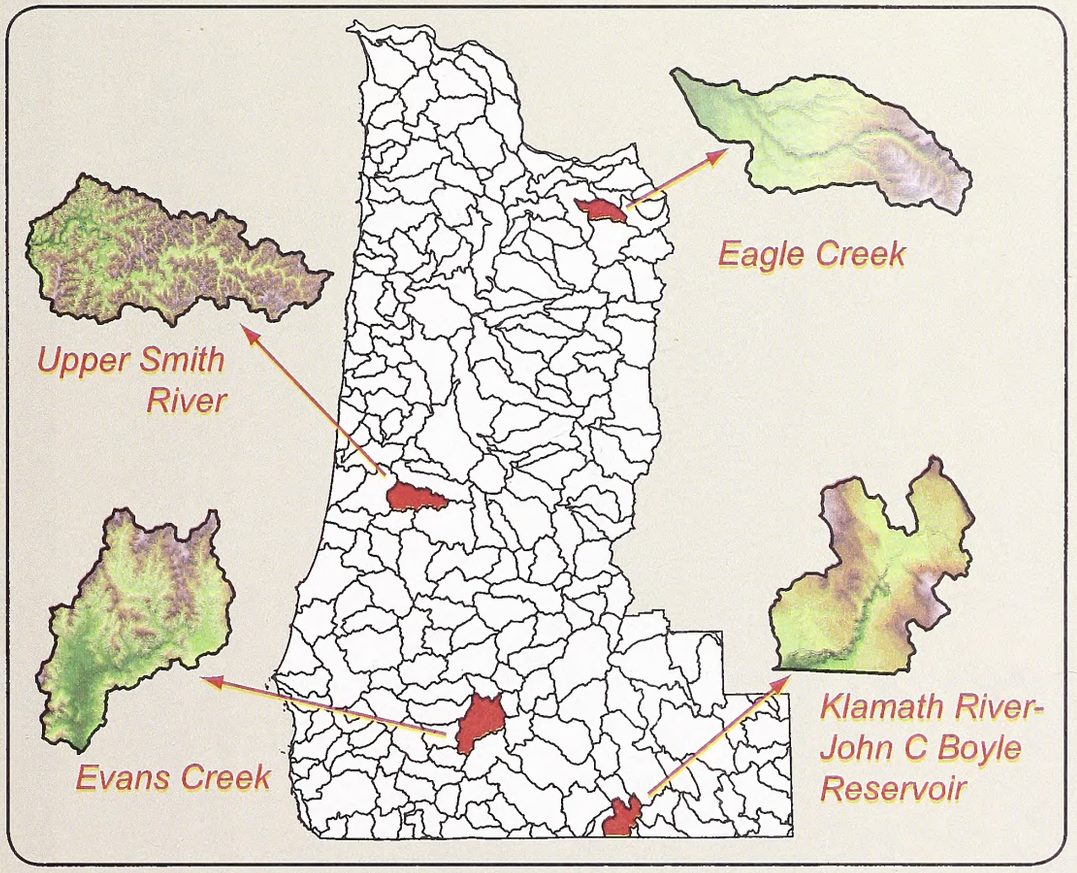


Figure 8 – Four Representative Fifth Field Watersheds

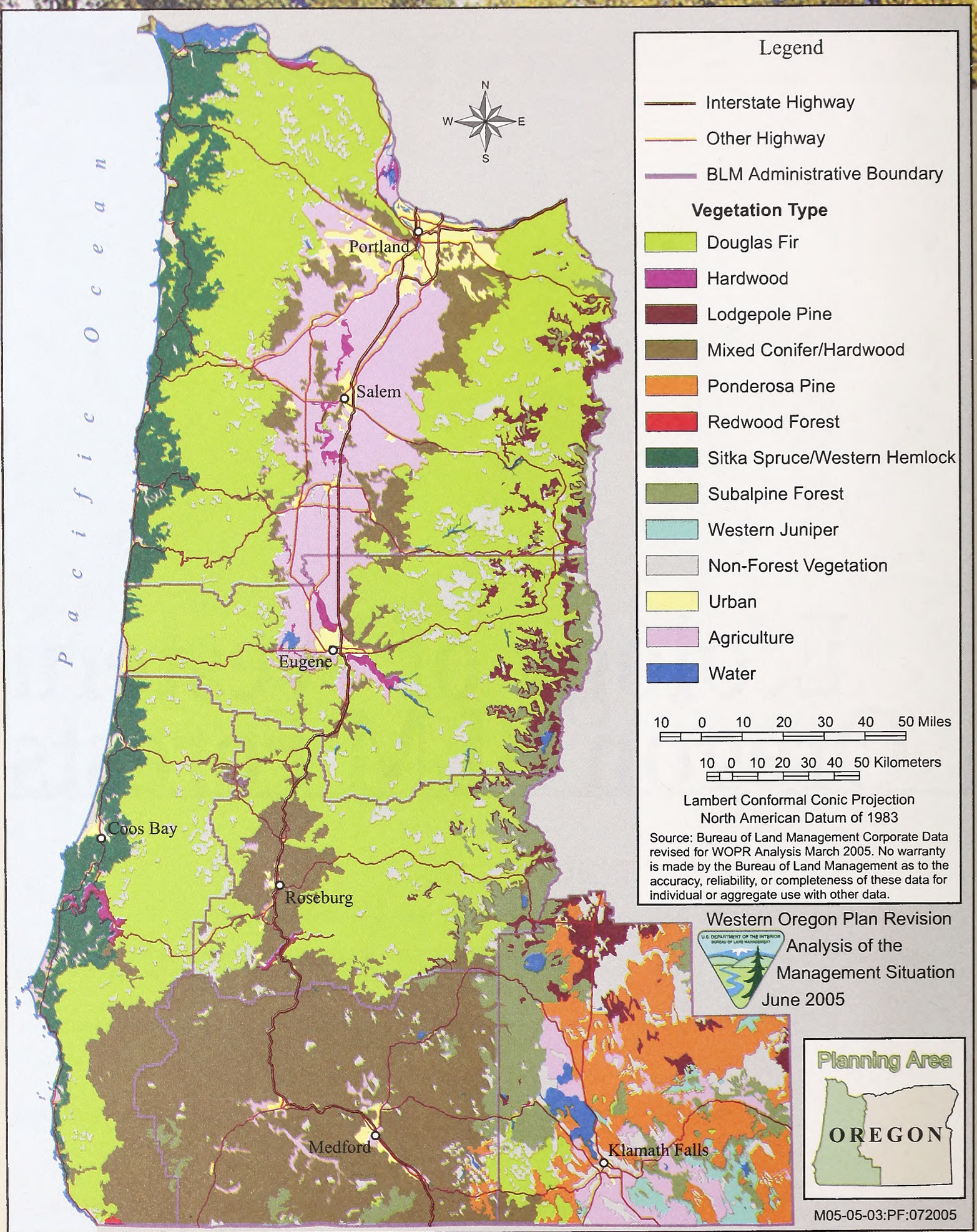
An underlying assumption in the analysis of the management situation is that management of BLM lands would be in compliance with legal requirements of the O&C Act, Clean Water Act, Endangered Species Act and other applicable laws. In order to keep the document concise, the need for compliance with various laws was not repeatedly addressed in each section.

Although data is presented by fifth field watersheds, BLM districts or for western Oregon BLM, the data is based on information which is much more specific. Four representative fifth field watersheds were chosen for use in the document as illustrations or examples of this more detailed information (Figure 8).

Ecology of Western Oregon BLM Forests

Key Points

- Disturbance is essential to how forest ecosystems function.
- Most old-growth on BLM lands in western Oregon developed under low density conditions. Young managed stands will not develop similar structure or function to existing old-growth stands without management or natural disturbance.
- Management strategies designed to restore ecological functions should reflect the ecological variation among the physiographic provinces.
- Thinning can speed development of old-growth forest structure.
- In fire-adapted ecosystems (much of southern Oregon), management strategies must either mimic or accommodate fire.
- Fuels management can reduce wildfire severity and extent.
- Management actions designed to avoid short-term impacts are unlikely to achieve long-term ecological objectives.
- Not all riparian areas should be old-growth conifer forests. Hardwood-dominated riparian areas are an important landscape component.



Map 3: Forest Vegetation Types in the Planning Area

Ecology

Current Condition and Context

Disturbance is essential to how forest ecosystems function.

- Forest ecosystems on BLM lands in western Oregon are dynamic and are shaped by their disturbance history.
- Disturbance is essential for regulating many ecosystem functions, such as nutrient and water cycling.
- To maintain and restore ecological functions through management, it is necessary to mimic or accommodate the processes that created the functions.

Management strategies designed to restore ecological functions need to reflect the ecological variation among the physiographic provinces.

- BLM lands in western Oregon are predominately in the Coast Range, West Cascades, and Klamath Mountains physiographic provinces with small amounts in the East Cascades and Willamette Valley. (See Figures 9 and 10.)
- The natural disturbance regime of BLM lands varies generally from low frequency, high severity disturbance in the north to high frequency, low severity disturbance in the south.
- A strategy that reflects ecological variation would involve, for example, more frequent and less intense management disturbances in the Klamath Mountains province than in the Coast Range.
- Forest vegetation types vary with ecological zones. (See Map 3.) Ecological variation in management exists to some degree in current RMP management direction for the northern and southern general forest management area. This variation in management, however, is far less than the variation in ecological processes.

Figure 9 –Percent BLM administered land by Physiographic Province

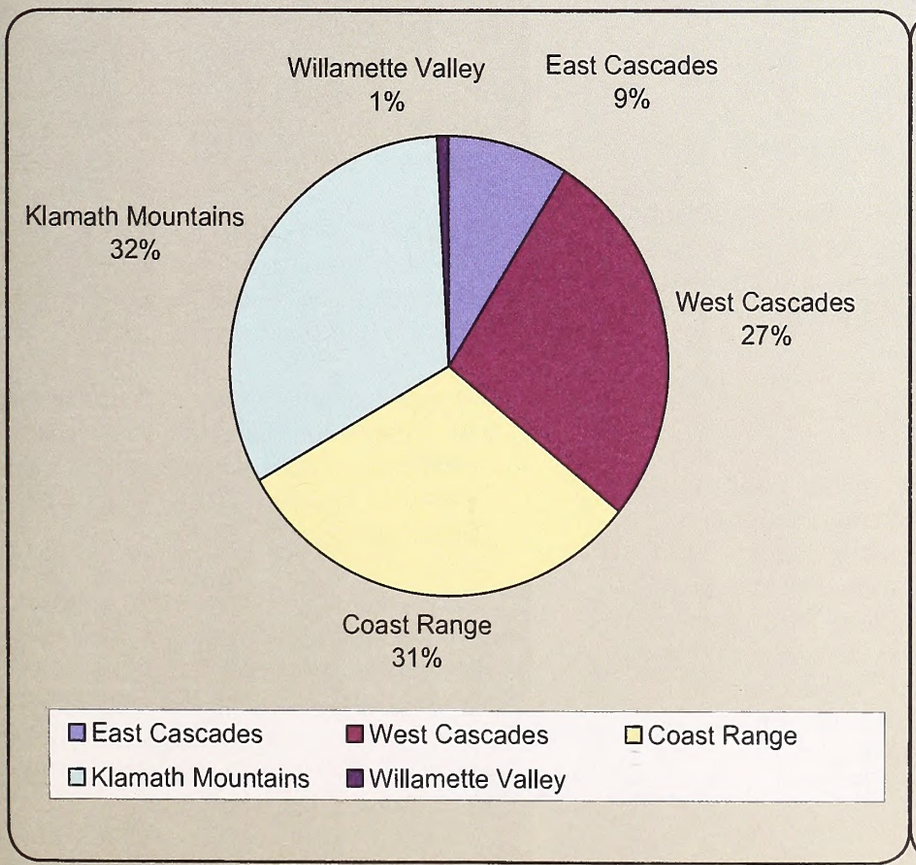
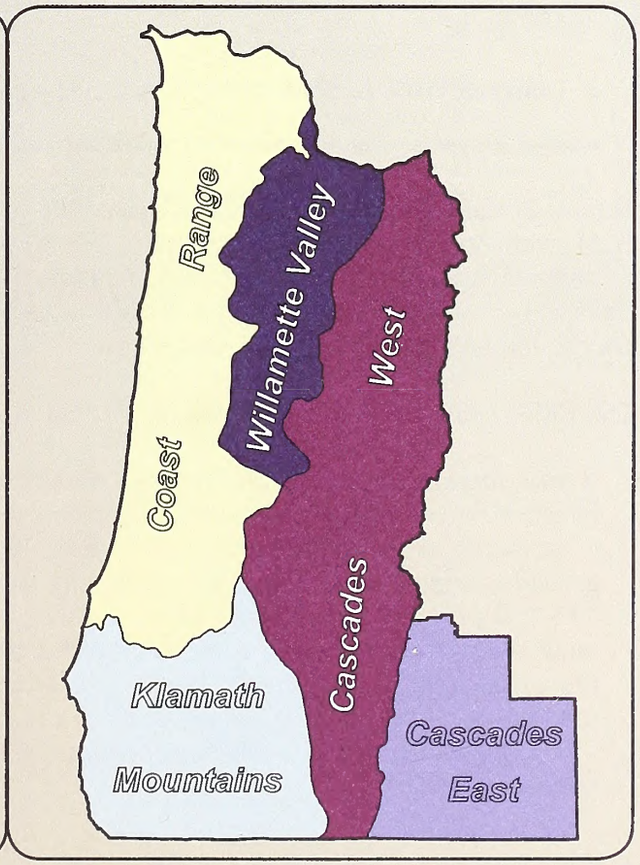


Figure 10 – Physiographic Provinces in the Planning Area



The historic landscape was not all old-growth forest (200 years+)*.

Historically, an average of approximately half of the landscape was old-growth at any one time.

Historically, an average of approximately half of the landscape was old growth forest at any one time.

- At the regional scale (i.e., the range of the northern spotted owl), the historic (i.e., pre-European settlement) amount of old-growth average about 50% of the entire forested landscape. Currently, slightly less than 10% of the region (all ownerships) is old growth.

- At the provincial scale (e.g. Coast Range), the historic amount of old-growth probably fluctuated between 25% and 75% of the entire forested landscape.

- At smaller spatial scales (e.g. fifth field watersheds), the historic amount of old-growth was extremely variable, fluctuating from 0% to 100%.

- Currently, 15% of BLM land in western Oregon is old-growth.

**The use of 200 years+ is an approximation used for discussion and modeling purposes.*

Map 4, Broad Forest Condition Classes in 1900 shows that 15 percent of BLM lands had undergone recent fires. The 53 percent which is shown as native forests on Map 4 consisted of a variety of forest age classes and densities. The O&C lands did not consist entirely of old growth forests prior to the passage of the 1937 O&C Act.

The RMP definition of an old growth conifer stand is:

> *"Older forests occurring on western hemlock, mixed conifer, or mixed evergreen sites which differ significantly from younger forest in structure, ecological function, and species composition. Old growth characteristics begin to appear in unmanaged forests at 175-250 years of age. These characteristics include (a) a patchy, multi-layered canopy with trees of several age classes; (b) the presence of large living trees; (c) the presence of large dead trees (snags) and down woody debris, and (d) the presence of species and functional processes which are representative of the potential natural community."*

> *"For purposes of inventory, old growth stands on BLM-administered lands are only identified if they are at least ten percent stocked with trees of 200 years or older and are ten acres or more in size. For purposes of habitat or biological diversity, the BLM uses the minimum and average definitions provided by the Pacific Northwest Experiment Station publications 447 and GTR -258. This definition is summarized from the 1986 interim definitions of the Old Growth Definitions Task Group."*

Management strategies designed to restore old growth on western Oregon BLM lands must mimic the conditions under which the old growth developed.

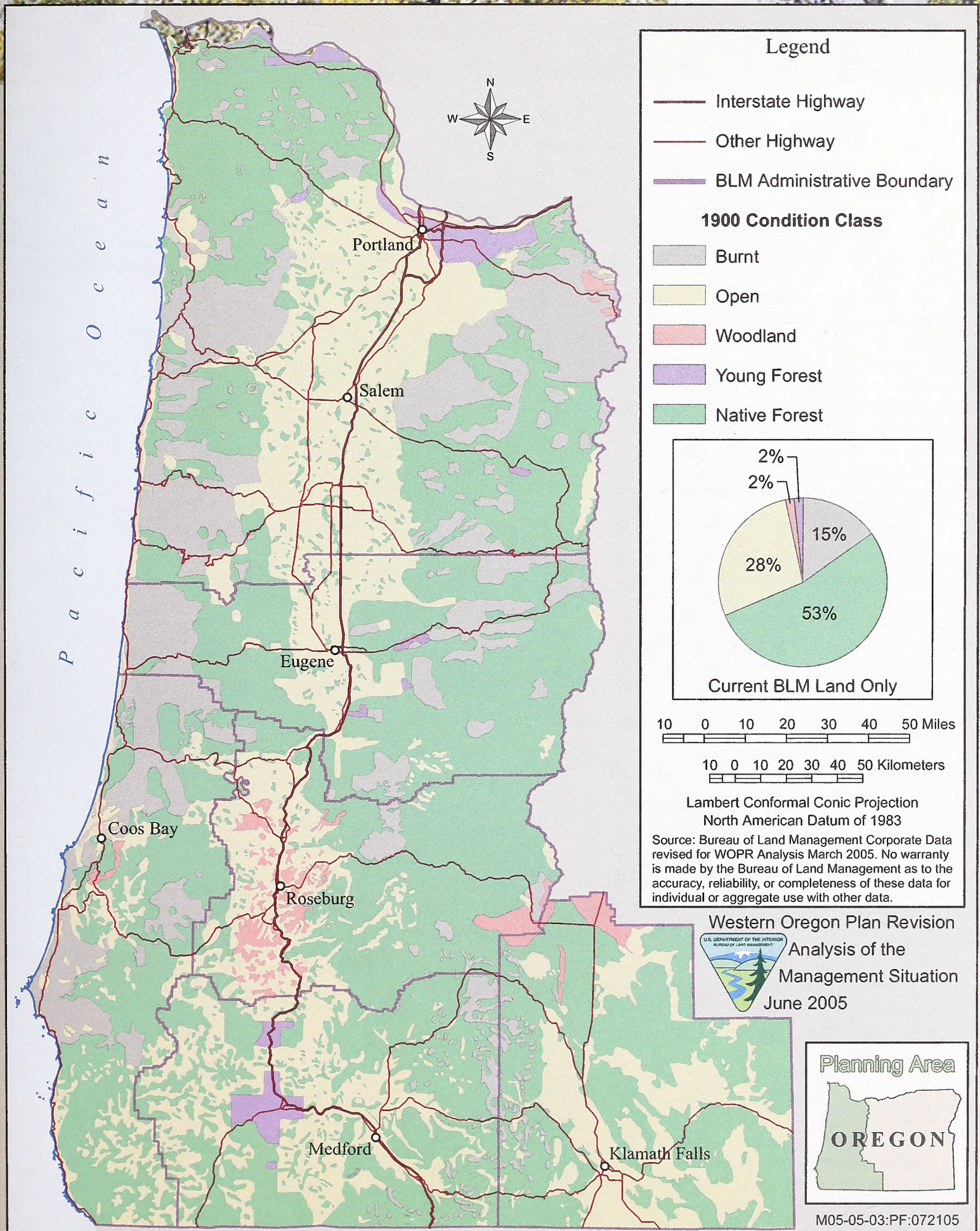
- Old-growth forests are highly heterogeneous in their structure and composition at multiple scales. There are multiple pathways to old-growth forest structure.

- Most old-growth on BLM lands in western Oregon developed under highly variable and low density conditions.

- Virtually all young managed stands are developing along a trajectory that is fundamentally different from that which existing old-growth experienced.

- Without management or disturbance that creates variable and low density conditions, these young stands are unlikely to develop similar structure to existing old-growth stands.

- There are currently approximately 800,000 acres of young, managed stands (approximately 1/3 of the entire planning area) that fit this description (see Fig. 20, Timber section). The BLM has been thinning slightly more than 1% of these stands per year.



Map 4: Broad Forest Condition Classes in 1900

- Many mature stands (80-200 years old) are structurally simpler than old growth and may be on a different developmental trajectory because of differences in disturbance history. The simpler mature stands generally provide less ecological function than complex old growth stands (e.g., lower quality nesting and foraging habitat for northern spotted owls). The current plan largely lumps together mature and old-growth stands as "late-successional forest."

Figure 11 displays the proportion of each fifth field watershed which was defined as late-successional forest. It demonstrates that past conditions, land use and forest management activities have resulted in higher concentrations of large trees in the West Cascades and Klamath mountains and lesser concentrations in the Coast Range mountains and Willamette Valley.

Figure 12 shows that most watersheds in the Coast Range mountains and lower elevations in the Klamath Mountains, are predominately comprised of young forests in which the average tree size is less than 10 inches in diameter. Figures 11 and 12 are based on data covering all ownerships within western Oregon.

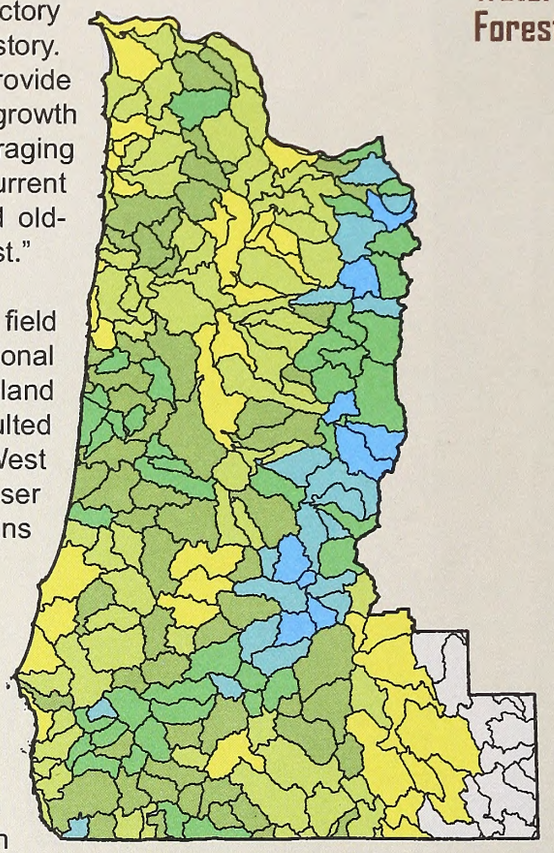


Figure 11 – Proportion Fifth Field Watersheds as Late Successional Forests (80+yrs)

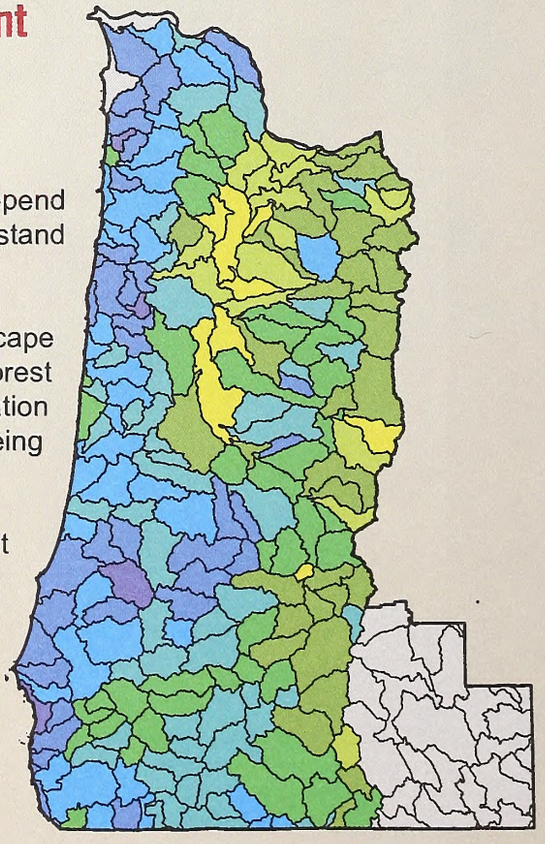
Percent Medium and Large Older Forest

- 0.1 to 10
- 10.1 to 20
- 20.1 to 30
- 30.1 to 40
- 40.1 to 50
- Greater than 50
- No Data

Most old growth forests on BLM lands, such as this stand in the Wolf Creek Watershed in the Eugene District, developed under low and highly variable densities.

Landscape context is an important aspect of managing ecosystem function.

- Many important ecosystem functions depend as much on landscape context as stand conditions.
- One important aspect of landscape context for the BLM checkerboard is forest fragmentation. The effects of fragmentation depend on the ecosystem function being addressed.
- There are landscape management limitations related to BLM checkerboard lands (e.g., to recreate the pattern of natural disturbances is problematic). However, there are also management opportunities related to checkerboard ownership, such as providing habitat refugia dispersed within an intensively management landscape.



Percent Young Forest

- 0.1 to 10
- 10.1 to 20
- 20.1 to 30
- 30.1 to 40
- 40.1 to 50
- 50.1 to 60
- 60.1 to 70
- Greater than 70
- No Data

Figure 12 – Proportion of Fifth Field Watersheds as Young Forests

A typical landscape pattern for BLM-managed lands is scattered old growth amongst younger stands and intensively-managed industry lands.

Debris flows, such as this one in the Coast Range, are an important source of wood in streams.

This 65-year old stand exhibits the homogeneous structure and high risk of catastrophic disturbance that will be typical of existing young managed stands without active management.

- The natural and management induced disturbance history of a watershed determines how much wood accumulates in streams.
- Debris flows are a source of large accumulations of wood in streams and a mechanism for wood redistribution.
- Roads, bridges, and culverts restrict the movement of wood and sediment into and through the stream network.
- Landscape context affects wildfire behavior and spread. Treating fuels at a landscape scale can increase the effectiveness of fuels management in reducing wildfire severity and extent.

Management Opportunities

Effects of density management on stand structure and ecosystem function.

- Without active management, most existing young stands will have homogeneous structure at multiple scales, high risk of catastrophic disturbance, and limited ecosystem function.
- Thinning can alter the structural development of stands and speed the development of old-growth forest structure, but not all thinning is the same. Traditional commercial thinning contributes little to developing complexity in stand structure.
- Thinning to low densities and variable spacing can dramatically alter stand structural development. This causes some short-term effects, such as microclimate changes. Thinning designed to avoid or minimize these kinds of short-term impacts is unlikely to achieve long-term ecological objectives, such as development of old-growth forest structure or spotted owl nesting habitat.
- Forest stands are dynamic, and any substantive disturbance -- such as thinning -- will create winners and losers. However, thinning has little short-term effect on populations of most wildlife species: most species continue to find habitat in stands after thinning, and many species either maintain or increase population in response to thinning. Few species would be eliminated from stands in response to thinning.

- Thinning presents an opportunity to create snags and coarse woody debris in managed young stands. Current amounts of snags and coarse woody debris in managed young stands are far lower than in natural young stands and contribute to reduced habitat quality for a wide range of species.

- The large amount of managed young stands located in reserves provides an opportunity for increased thinning activity in reserves.

- Provide management direction that segregates stands by structure rather than age class when placing limits on which stands in reserves may be thinned.

This 65-year-old stand was thinned to low density and variable spacing resulting in more complex stand structure.

Protection from disturbance is sometimes counterproductive

- In fire-adapted ecosystems, management strategies must either mimic or accommodate fire.

- Management strategies in fire-adapted ecosystems designed to avoid short- term impacts are unlikely to achieve long-term ecological objectives.

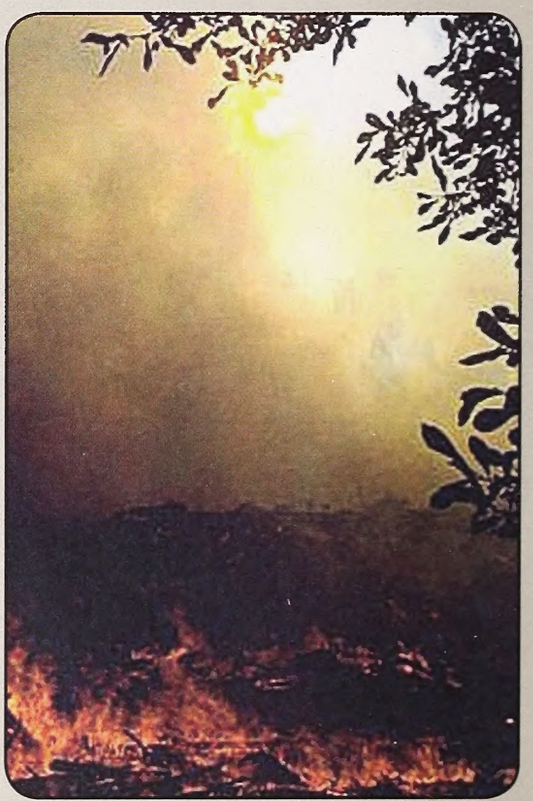
- The fuel condition of most of the BLM landscape is different than it was historically. Fuel loads are dramatically higher in the Klamath Mountain and East Cascades provinces. These forests have shifted towards fire-intolerant species.

- As with the amount of old-growth forest structure or the amount of hardwood-dominated riparian areas, management of fuel condition should derive targets of various stand conditions at the landscape scale.

- Special habitats such as oak woodlands and most meadows and prairies are fire-created or fire-adapted ecosystems. Special status species associated with these habitats need management that either mimics or accommodates natural disturbance, not protection from disturbance. Current management direction tends to buffer these habitats from disturbance.

- Naturally-created early seral ecosystems differ in structure from clearcuts which lack the habitat components of remnant green trees, snags, and coarse woody debris (biological legacies). However, regeneration harvests with biological legacies may better mimic naturally-created early seral ecosystems.

- Management that restores and maintains ecosystems through treatment that either mimics or accommodates the disturbance regime which created them will likely provide habitat for the associated special status species.



Prescribed fire can be used to manage fuel loads and plant and animal habitats.

Increased temperatures resulting from climate change will have some effects on plant community distribution. These anticipated effects could be incorporated into forest and fuels management strategies. However, uncertainty about precipitation changes makes effects on hydrology and fisheries too speculative for analysis.

- Regional average temperatures are likely to increase over the next several decades. This will result in longer growing seasons, longer fire seasons, and shifts in vegetation zones. The effects of different forest and fuels management strategies on plant communities could differ in the face of increased average temperatures.

- Increased average temperatures will result in changes in the distribution of plant communities. These shifts could be most pronounced on marginal forest sites in southern Oregon, where some forests could become shrub communities following disturbance such as timber harvest or wildfire. Montane forests will likely shift upwards in elevational distribution. Forest management strategies that maintain forest cover would likely result in less plant community change than forest management strategies that employ traditional regeneration harvests.

- Hotter summers will increase drought-stress on forests (especially if combined with decreased summer precipitation). Longer fire seasons combined with higher temperatures will likely increase the frequency and severity of wildfires. Fuels management strategies that reduce the risk of catastrophic wildfire would reduce the likelihood of plant community change.

- Precipitation changes are uncertain. Some models predict some increase in regional winter precipitation. Some predict a decrease in total annual precipitation.

- Warmer winter temperatures could contribute to increased winter streamflow and flood frequency, but such effects could be reduced or counterbalanced by decreased winter precipitation. Earlier snowmelt could contribute to higher spring streamflow and lower summer streamflow, but effects could be reduced or counterbalanced by increased winter precipitation resulting in increased snowpack.

Areas of Relative Ecological Importance to Guide Land Uses and Management

The current plan describes the ecological importance of late-successional and old-growth forests, designates Areas of Critical Environmental Concern, and identifies a wide range of special habitats. In addition to these, management strategies should recognize a range of potential riparian forest types.

Differential role of hardwood and conifer riparian stands

- The current plan establishes old-growth conifer forest as the target condition for all riparian stands without acknowledging the role of hardwoods in riparian stands.

- Research in the past decade has detailed the importance of riparian hardwoods in aquatic and riparian food webs. Alders, for instance, are an important part of the food web for a healthy fish and wildlife population.

- Riparian areas are a dynamic portion of the forest landscape, subject to frequent disturbance from multiple sources.

- Goals for different amounts of riparian forest types and the need to maintain diverse riparian conditions that change over time must be established at the landscape scale.

Hardwoods along stream reach.

Social Economic

Key Points

- Lower timber harvests on BLM lands have reduced BLM's contribution to community economic conditions in the form of:
  - less than expected lumber/wood-related jobs
  - less than expected personal earnings

- Over the last three decades real average earnings per job have decreased in several western Oregon Counties, many of which also experienced decreased employment for the manufacturing industry (including timber jobs).

- BLM has contributed to community economic conditions other than timber harvest by providing recreation opportunities and spending funds on:
  - sivilcultural activities
  - fire and fuels program efforts
  - habitat and watershed restoration
  - harvests of special forest products

- Between 1990 and 2000 softwood log exports dropped by 2 billion board feet while imports increased at a lower magnitude of approximately 240 million board feet. There is some mill capacity or demand for log volume in the region that is not being met with locally produced logs.

Social Economic

Current Conditions and Context

Complex social and economic changes have occurred in the Pacific Northwest over the last three decades. High rates of population growth in the region, especially in the urban areas along the I-5 corridor, have brought new people to the Pacific Northwest who have different values about the appropriate uses of federal lands.

- Federal forests are highly valued for recreation, visual quality, and the protection of water, wildlife and fish in addition to timber resources.
- Agriculture and industries based on the extraction of forest products have shown little growth.
- The percentage of people in the region whose livelihood is based on the extraction of goods and services from federal lands has declined.
- New business and employment opportunities fueled by the needs of the expanding population have been primarily in the trade and services sectors.

Oregon's economy is diverse. As of the 2000 census Oregon's total population was 3.4 million, an increase of 63 percent from 1970. Table 2 and Figures 13, 14, and 15 show the percent changes for population, employment and average earnings from 1970 to 2000 and later in some cases.

Table 2 – Percent Changes for Population, Employment and Average Earnings

Location	Population % change from 1970 to 2000	Employment % change from 1970 to 2000	Manufacturing Employment (incl. forest products) % change from 1970 to 2000	Services & Prof. % change from 1970 to 2000	Average Earnings* % Change from 1970 to 2002
OREGON	90%	128%	44%	177%	8%
Benton	45%	164%	194%	225%	7%
Clackamas	103%	289%	111%	450%	8%
Columbia	61%	97%	-9%	195%	-10%
Coos	10%	39%	-56%	90%	-10%
Curry	61%	107%	-44%	N/A	-22%
Douglas	39%	90%	-3%	157%	-10%
Jackson	90%	188%	62%	266%	-0.2%
Josephine	109%	169%	41%	243%	-18%
Klamath	27%	46%	-3%	85%	-10%
Lane	49%	120%	33%	172%	-6%
Lincoln	71%	138%	-13%	N/A	-11%
Linn	42%	82%	17%	141%	2%
Marion	87%	145%	98%	191%	10%
Multnomah	19%	68%	4%	86%	19%
Polk	75%	117%	4%	199%	-14%
Tillamook	34%	76%	-9%	147%	-5%
Washington	180%	437%	213%	727%	36%

Sources: Economic Profile System at www.Sonoran.org and Census data at www.census.gov
In some cases changes between 1970 and 2000 are the focus due to data limitations. Changes over the life of the plan (1995 to 2002) will be used where data is available.
**Average earnings adjusted for inflation*

- Of the total population, 88-percent live in the 18 western Oregon counties that make up the planning area.
- In several cases, population growth was slow and steady while in others there were greater changes surrounding economic recession periods.
- The counties with the fastest growing populations are in the Salem and Medford districts (Figure 13).
- The county with the least amount of population growth is Coos county in the Coos Bay district.
- Employment increased for all 18 western Oregon counties in the planning area. Growth was above the state average for counties located in the Salem and Medford districts (Figure 14).

Figure 13 – Percent Population Change from 1970 to 2000

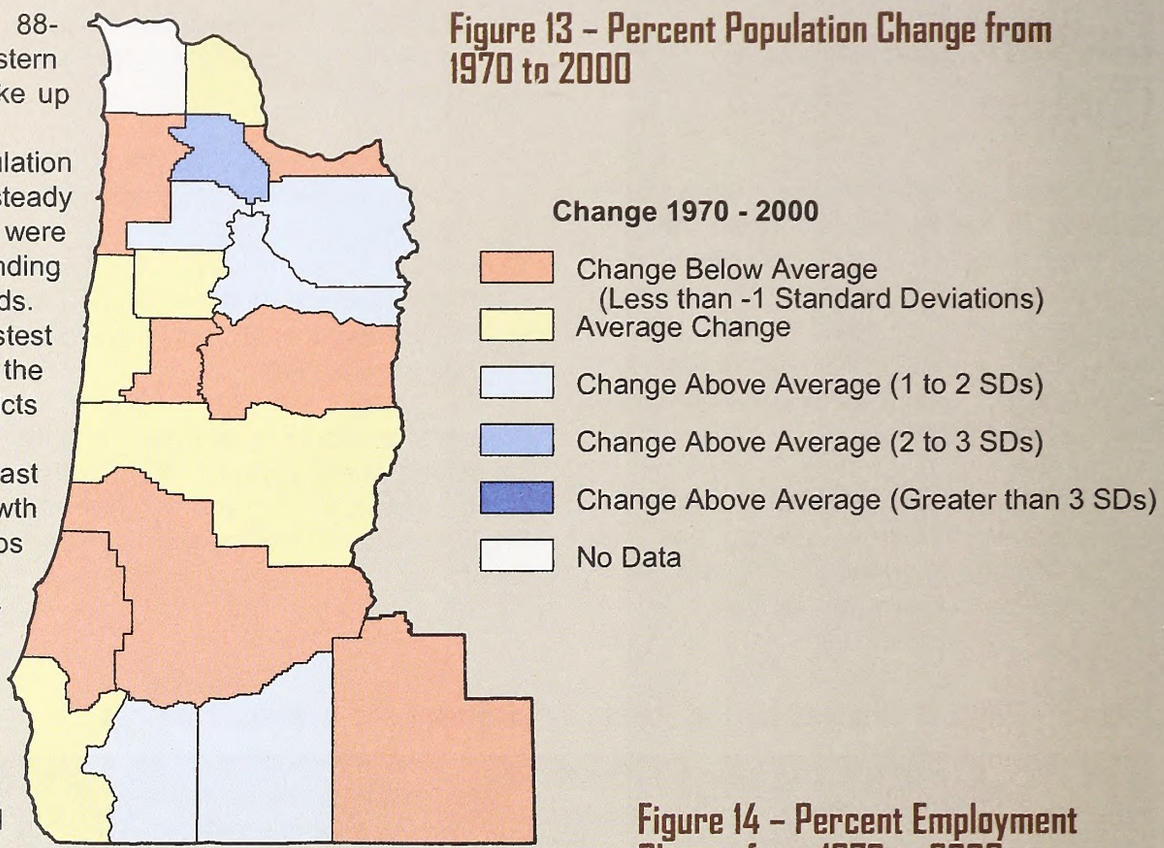
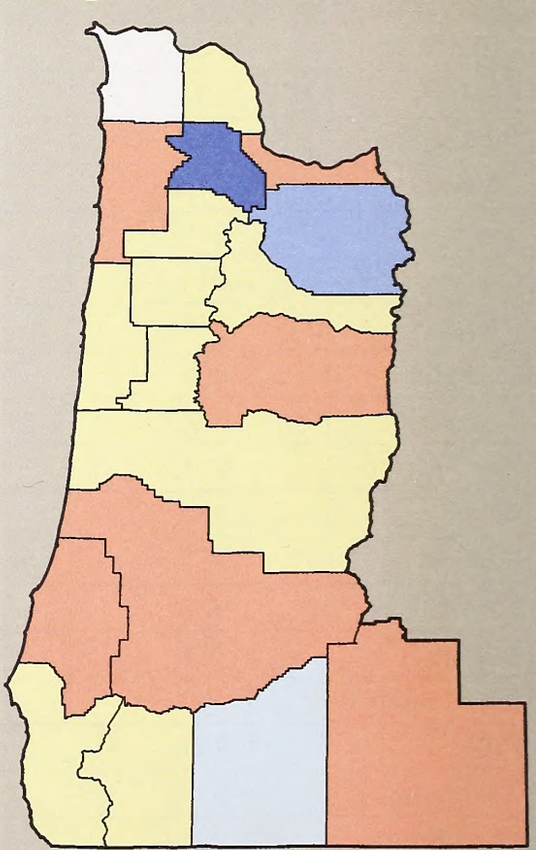


Figure 14 – Percent Employment Change from 1970 to 2000



As shown in Table 2 and Figures 16 and 17, the "Services and Professional" employment category experienced significant growth in all of western Oregon for the counties where data was available. However:

- Despite increased employment opportunities, the manufacturing industry which includes forest products and encompasses paper, lumber, and wood products manufacturing, has declined for several western Oregon counties.
- "The employment shift from manufacturing to services was consistent with nationwide shifts." (Northwest Forest Plan: the first ten years. Rural communities and economics).
- The districts with counties showing declines in manufacturing are: Salem, Coos Bay, Roseburg, and the Klamath Falls field office.

"The relative importance of forest base resource-related employment and income in the plan area's economy has changed over time, as has the contribution of forest products from the BLM lands to this mix." (Northwest Forest Plan: the first ten years. Rural Communities and Economics).

- Contrary to the tremendous population growth and employment growth that occurred over the last three decades, average earnings have increased minimally in cases where an increase occurred at all (Figure 15).
- In several of the western Oregon counties, average earnings actually declined.
- As expected, the same counties that experienced decreased employment in the manufacturing industry also experienced a decrease in average earnings per job as shown in Table 2.
- Where the average earnings are higher, there are more full-time jobs that pay higher.

Figure 15 – Average Earnings

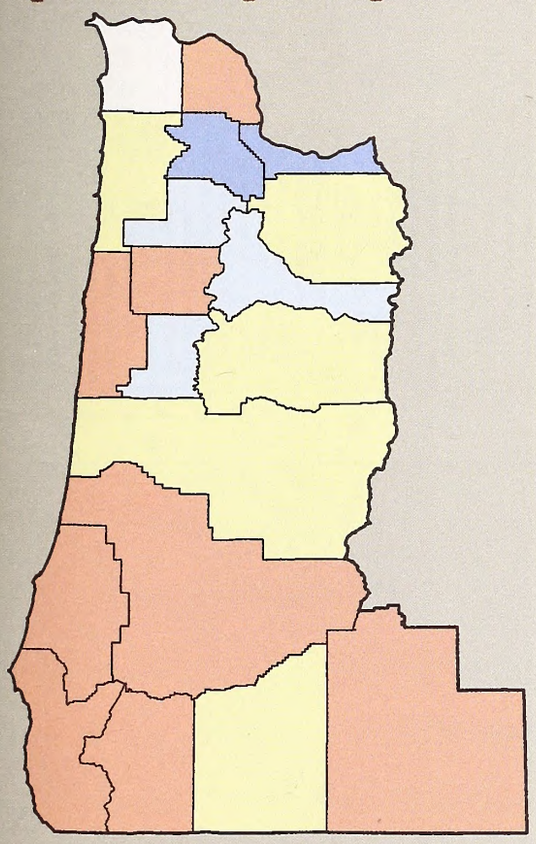


Figure 16 – Services and Professional Employment Change from 1970 to 2000

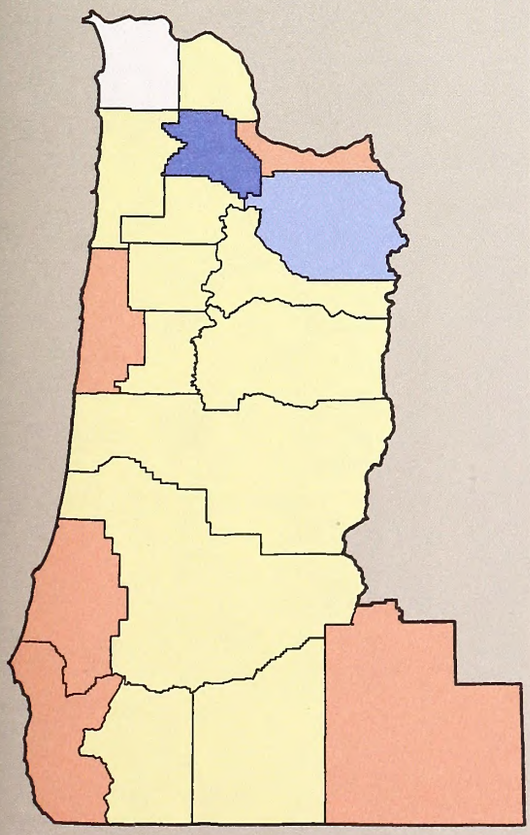
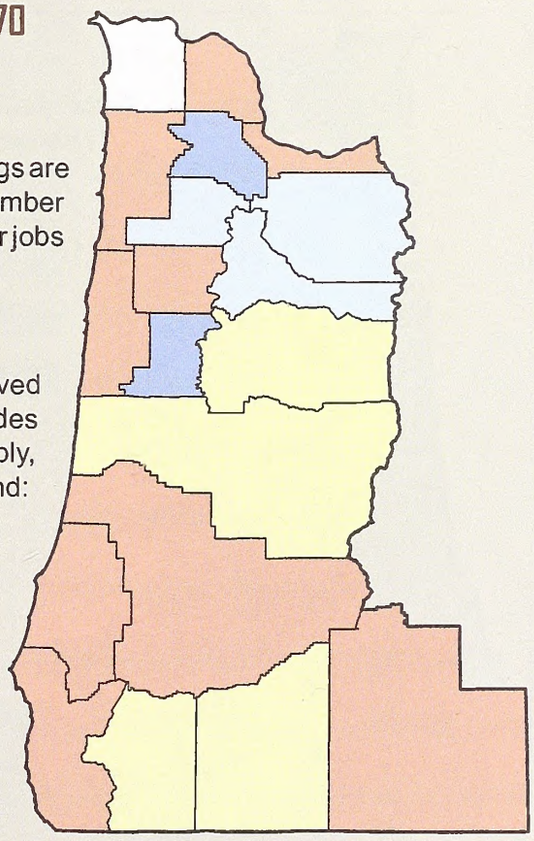


Figure 17 – Manufacturing Employment Change from 1970 to 2000



- Where the average earnings are lower, there are a larger number of jobs with a lower wage or jobs are part-time or seasonal.

Timber

The timber industry has evolved over the last several decades due to changes in timber supply, technology, and product demand:

- Fewer mills in Oregon.
- Greater diversification.
- A wider range of products.
- More efficient use of the timber resource.

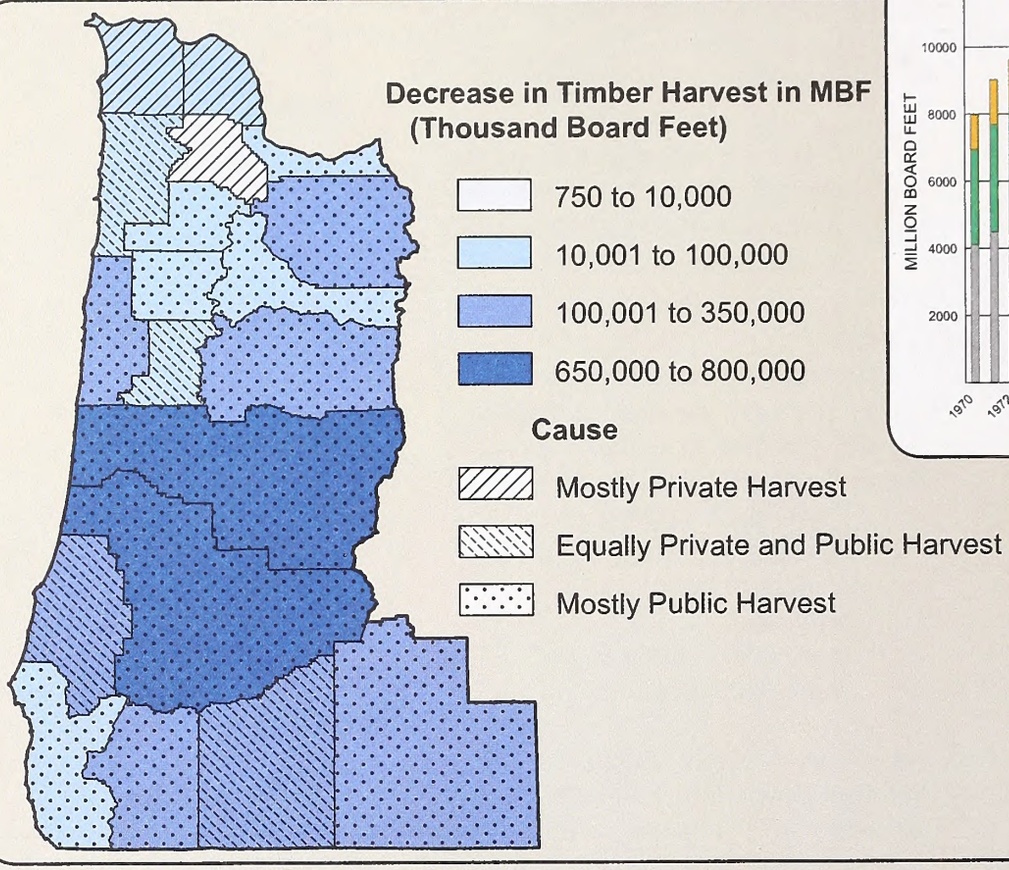
As shown in Figure 18 and 19, western Oregon harvest levels declined in the early 1980's due to economic downturns and experienced further declines on federal lands starting in 1990 due to Endangered Species Act concerns. Also evident is BLM's decreasing contribution to total western Oregon timber supply where BLM's contribution declined from 16.03 percent in 1973 to 1.41 percent in 2002.

Consumption (demand) of timber in Oregon was severely reduced by the depressed national economy at the start of the 1980's, however; improvements in residential and commercial construction spurred the beginning of industry recovery creating increasing demand until about 1988.

Softwood saw log consumption data in lumber and plywood mills are shown for western Oregon in Figure 20. Consumption for this sector constitutes the majority of demand for log volume is well above harvest with the gap being filled by log producers from outside the area.

Increasing recovery is also important. While western Oregon log consumption by lumber and plywood mills has remained relatively stable for 10 years or so, lumber production has increased nearly 30%, likely due to modernization and increased efficiencies in mill processes. Quantifying timber harvest in terms of demand and supply is difficult because demand (log volume outputs) is not isolated to the planning area.

Figure 18 – Change in Public and Private Timber Harvest



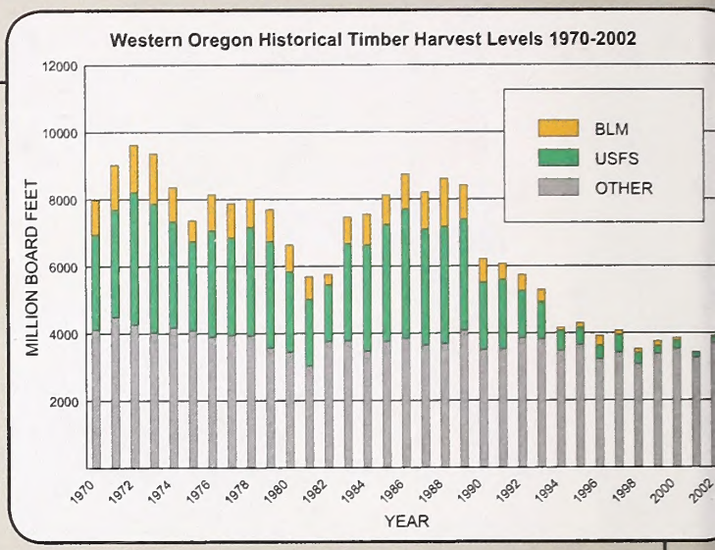


Figure 19 – Percentage Change in Wood Products Employment from 1990 to 1994

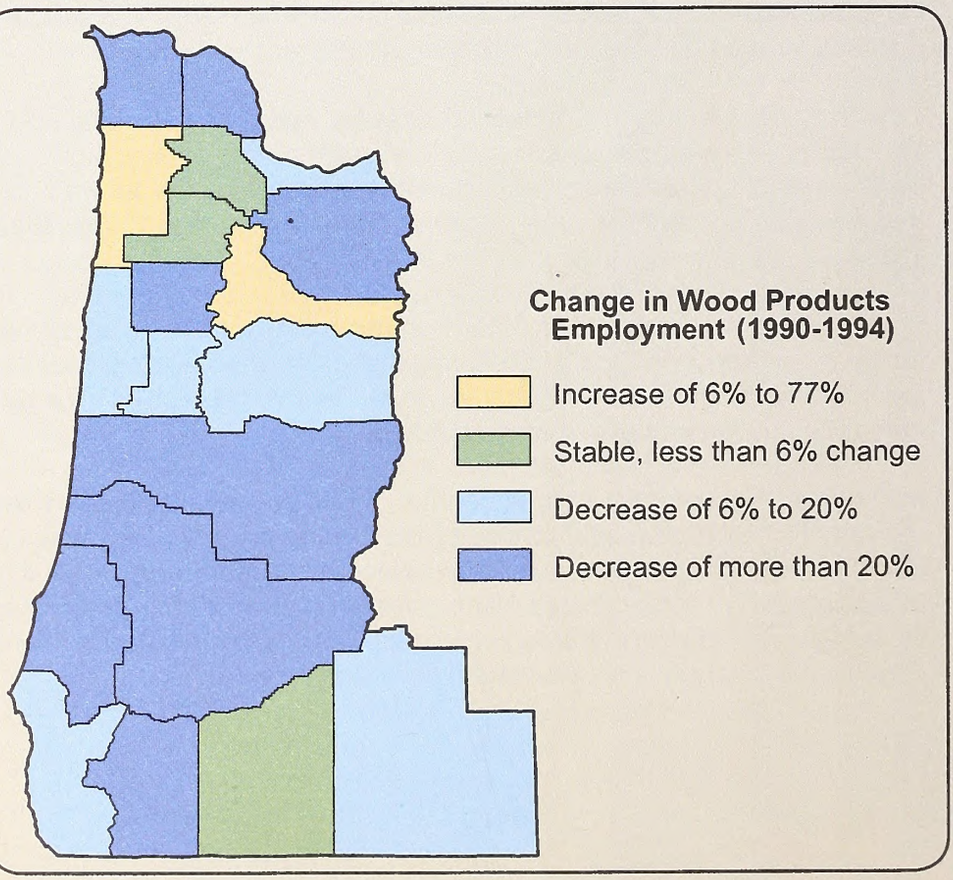
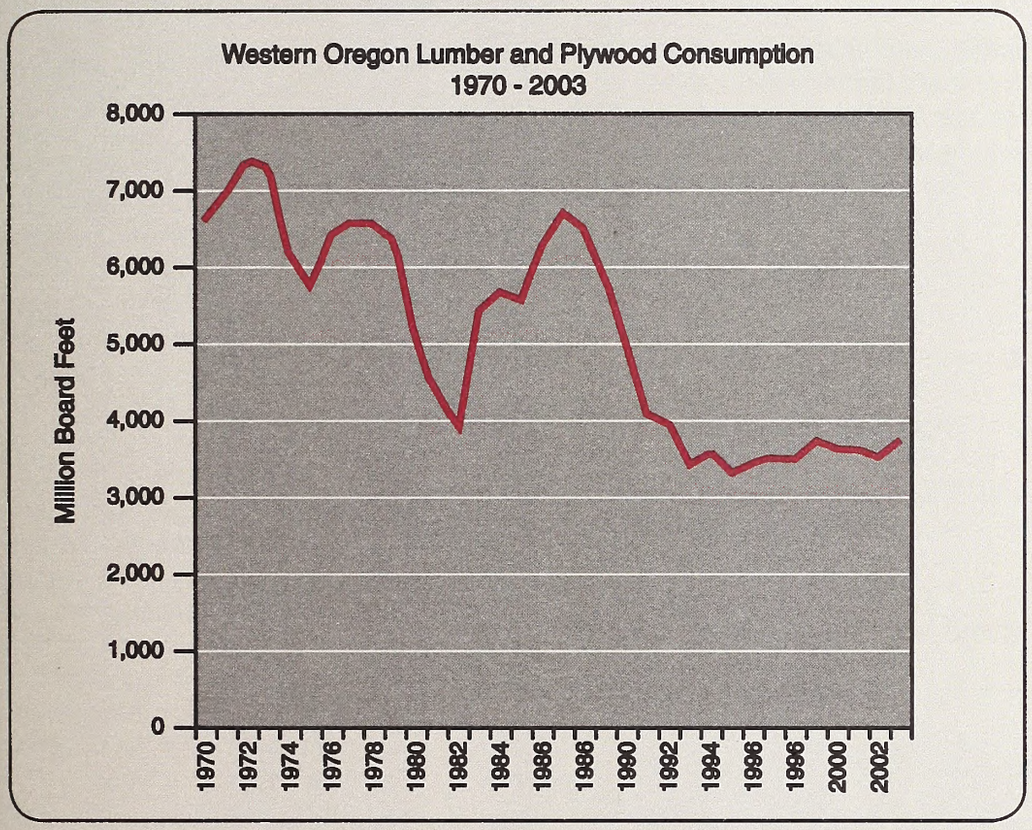


Figure 20 – Western Oregon Sawlog Consumption for Lumber and Plywood Mills



Source: Greg Latta, OSU, May 2005

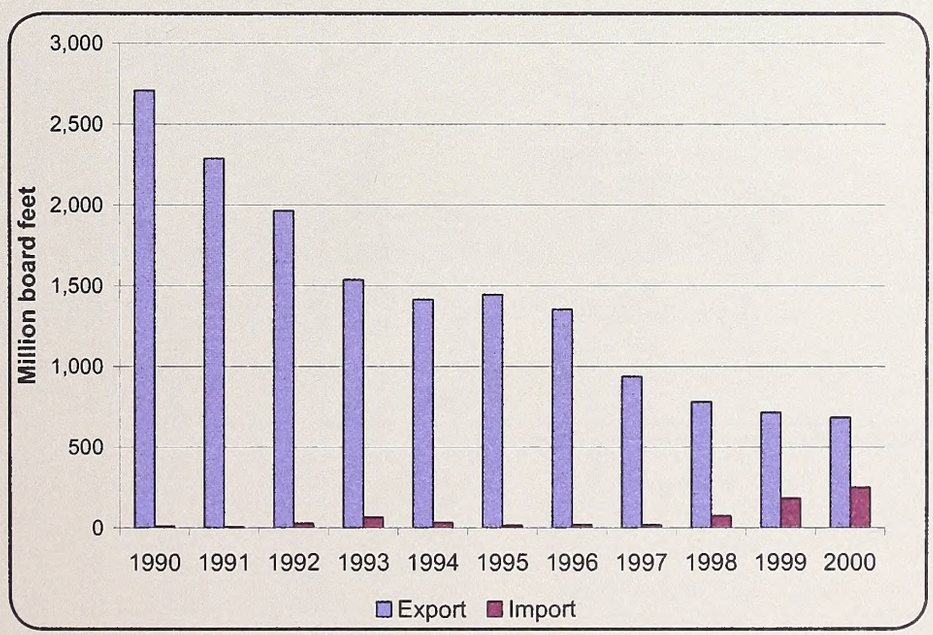
Exports

The reduction in timber harvest across all ownerships in the planning area increased the prices the local timber industry paid for logs. Because fewer logs were available locally, local industry became more competitive in the international market. Figure 21 shows that:

- Softwood log exports dropped from 2.7 billion board feet in 1990 to 0.7 billion board feet by 2000,
- Imports increased from about seven million board feet to almost 250 million board feet.

This shows that there is still a large demand for logs in western Oregon and imports are filling the gap. This helped timber manufacturing industries, but it negatively impacted the timber export industry (Northwest Forest Plan: the first ten years. Rural Communities and Economics).

Figure 21 – Timber Exports and Imports in Planning Area, 1990-2000.[1]



Source: "Northwest Forest Plan: the first ten years. Rural Communities and Economics."

[1]The information on shifts in log export and import is based on data from the Seattle and Snake-Columbia Customs Districts (Warren 2004). Since the export and import data generally covers the entire Pacific Northwest, values were reduced by ten percent which is the ratio of eastside harvests in Oregon and Washington to total harvest in these states.

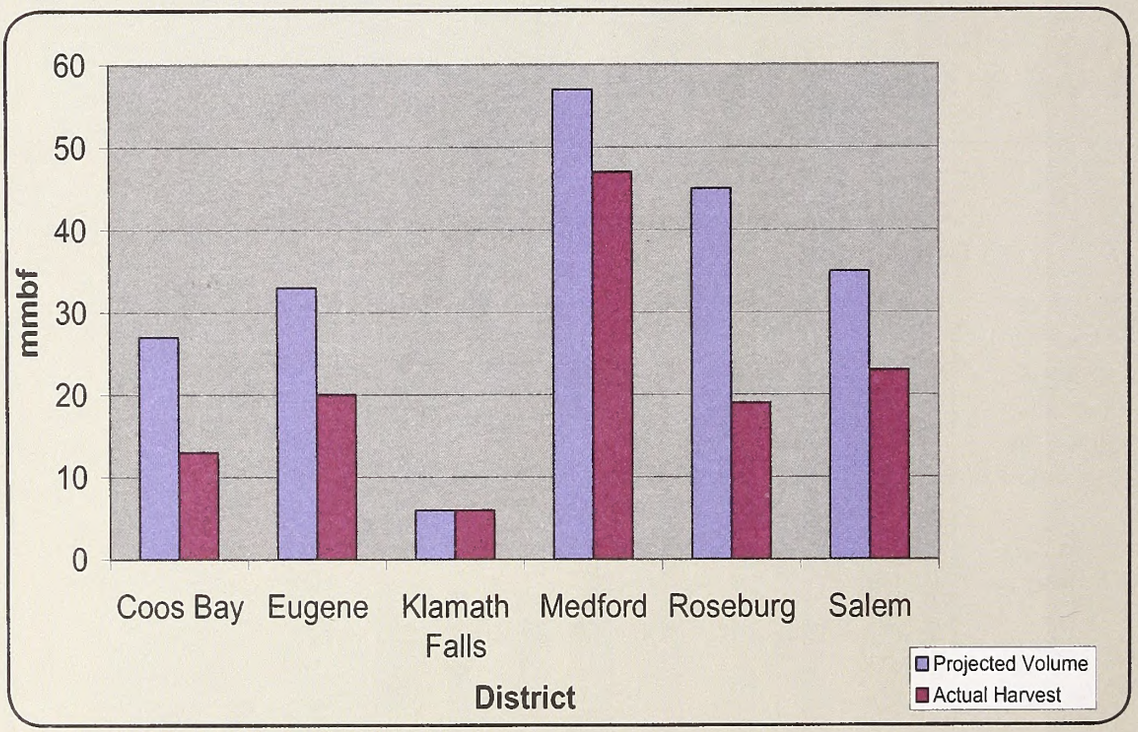
Allowable Sale Quantity

The allowable sale quantity (ASQ) of timber for the western Oregon BLM districts was set at approximately 211 million board feet annually (MMBF) by the 1995 western Oregon RMPs. This was adjusted to 203 MMBF 1999. Actual sales quantities have not met the levels anticipated in the RMPs. As reported in the eighth-year RMP evaluation and the Northwest Forest Plan socioeconomic 10-year monitoring report, several factors are believed to account for the inability of BLM to meet the projected allowable sale quantity levels and include:

- Lawsuits.
- Implementation of the Survey and Manage standards and guides.

Total BLM timber volume offered for western Oregon averaged 63 percent of planned levels for the first eight years of plan implementation. The total volume offered by districts between 1995 and 2002 was about 1,030 of the 1,624 MMBF projected. On an average annual basis the districts offered 129 MMBF as shown in Figure 22.

Figure 22 – Projected Versus Actual Volume by BLM Districts 1995-2002



Source: Eighth-year Evaluation Reports

Jobs and Income

- The forest products industry contributes significantly to the State's economy as the activities of the industry are translated into jobs, payroll, tax contributions, and the purchases of services and materials. The viability of the industry is significant to many small communities. To some towns, the local mill may be the only employer other than the service industry (Oregon Forest Products Industry: 1998).

- The location of the forest industry in Oregon is closely related to the geographic distribution of the timber resource. Due to proximity, much of the timber industry employment is also in western Oregon. On average about 59 percent of the logs processed are harvested within the area. (Oregon Forest Products Industry: 1998)

- The ability to transport logs long distances was an important factor in changing the timber industry. It means that mill jobs are no longer as reliant on local harvest as in the past.

- BLM's ability to provide a sustainable and predictable supply of timber directly and indirectly affects jobs and personal earning levels, particularly in western Oregon. A majority of the top timber harvest counties in the state are in the planning area.

Lumber and Wood-Related Products Employment

- For every million board feet of timber harvested and processed in Oregon approximately 10.0 jobs are generated, 8.0 in the lumber and plywood industry and 2.0 in the logging industry.*

- For every direct job there is an estimated 1.5 indirect and induced jobs.*

- For every dollar of job earnings it is estimated that indirect and induced earnings are up to an additional $1.00.*

Note: Above statistics are based on calculations provided in the 2005 report: "Northwest Forest Plan: the First ten Years, Rural Communities and Economics".

- BLM timber harvests supported about 740 fewer direct jobs annually than would have been supported at projected harvest levels in the 1994 Proposed Resource Management Plan Environmental Impact Statement.

- BLM western Oregon timber harvests contributed to two percent of industry employment in 2002. (Stevenson 2002, personal communication)

Figure 23 is a graph showing Oregon forest sector employment for the period of 1980 to 2001.

Other Employment

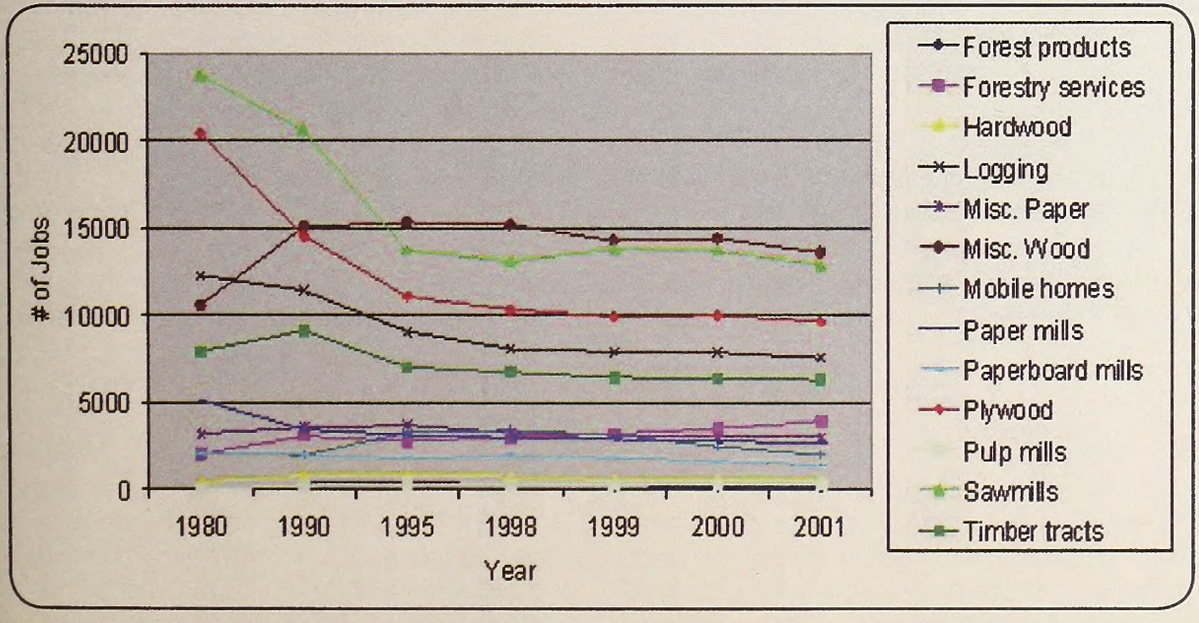
BLM lands contribute to employment and income in industries other than those that are related to lumber and wood-related products. Dispersed and developed recreation, commercial fishing, hunting, special forest products, mining, grazing, and forestry services all contribute to the region's economic health, and they are all affected by changes in federal forest management.

Special forest product output levels are constrained by two major items: (1) amount of budget available to put toward developing, implementing, and monitoring the program; and (2) destruction of the products when creating other types of jobs and earnings; such as fuel management projects, pre-commercial thinning, projects, and other silvicultural and/or restorative efforts.

Estimating jobs and income associated with the non lumber and wood-related industries for western Oregon is not possible because of a general lack of data as well as a lack of data for correlating jobs to these specific industries.

Since the economic contribution of all forest products (including lumber and wood-related) to the regional economy of the planning area is small, continued implementation of the RMPs will not likely change existing economic conditions and trends in the planning area overall. But as noted earlier, resources and effects of the plan are not evenly distributed. Sub-regions, individual businesses, and individuals are not affected equally (Northwest Forest Plan: the First Ten Years, Rural Communities and Economics).

Figure 23 – Oregon Forest Sector Employment



Recreation

While primary data is not available to appropriately measure economic benefits of recreation opportunities on BLM it is important to note that both resident and non-resident tourists contribute to local economies in the form of purchases of goods and services of accommodations, transportation, food and beverage, retail, and commercial recreation services. Below are some data on some of these expenditures.

- Outdoor recreation on BLM administered lands in the planning area yielded an estimated 3,953,400 visitor days in 2004, of these an estimated 24% were tourists who resided more than 50 miles from the recreation site. Using regional tourism studies for western Oregon in combination with national outdoor recreation valuation studies cited by the National Park Service and the Bureau of Land Management produces a conservative estimate of the value of non-resident outdoor recreation spending in the planning area. In 2004, visitors to BLM recreation areas spent over $68,300,000 in local communities to support their visit to the public lands.

- Resident outdoor recreation visitors also contribute to the regional economy. Studies conducted by the U.S. Forest Service in Region 6 show an average expenditure of $28.81/day for the common activities engaged in within the planning area. Given this multiplier, over $86,500,000 was spent within communities in the planning area in support of resident based outdoor recreation activity on BLM administered lands.

- Combining the valuation estimates generated for non-resident visits with resident visits yields over $154,800,000 contributed to communities in the planning region by outdoor recreation visitors to BLM administered recreation sites.

- Not all recreation visitors spend the same amount per day. Outdoor recreation tourists engaged in activities supported by commercial outfitters and guides spend a disproportionately higher amount per day than other outdoor recreation visitors. Studies cited by the National Park Service of river outfitters yielded an average per day expenditure of $93.64. Within the western Oregon planning area, 559,250 people recreated under the 1,415 Special Recreation Use Permits in 2004. Approximately 10% of these were issued to commercial outfitter and guide services offering numerous trips on the public lands. If only 10% of the total visits under permit were attributed to commercial guides, this activity alone would add $5,236,817 to western Oregon communities.

- In addition to this spending, guide services charge an average rate of $212/day – generating $11,856,100/year in guide service revenues within the planning area. A very conservative estimate of the total contributions from these 151 commercial outfitter and guide services depending on BLM administered lands in the western Oregon would be at least $17,00,000.

Payments to Counties

Shared revenues generated by the sale of timber and other goods and services from federal lands are important sources of funds for local governments. Historically, 50 percent of BLM timber receipts for the Oregon and California Railroad (O&C) lands in the planning area have been returned to counties as compensation for revenues foregone because the lands and resources are not in private ownership (Northwest Forest Plan: the First Ten Years, Rural Communities and Economics).

- The 18 western Oregon counties in the planning area were affected by the drop in federal timber harvest and associated timber.

- Safety Net payments, and the Secure Rural Schools and Community Self Determination Act (P.L. 106-393), both referred to as "Owl guarantee adjusted," were devised to compensate O&C counties for lack of timber receipts.

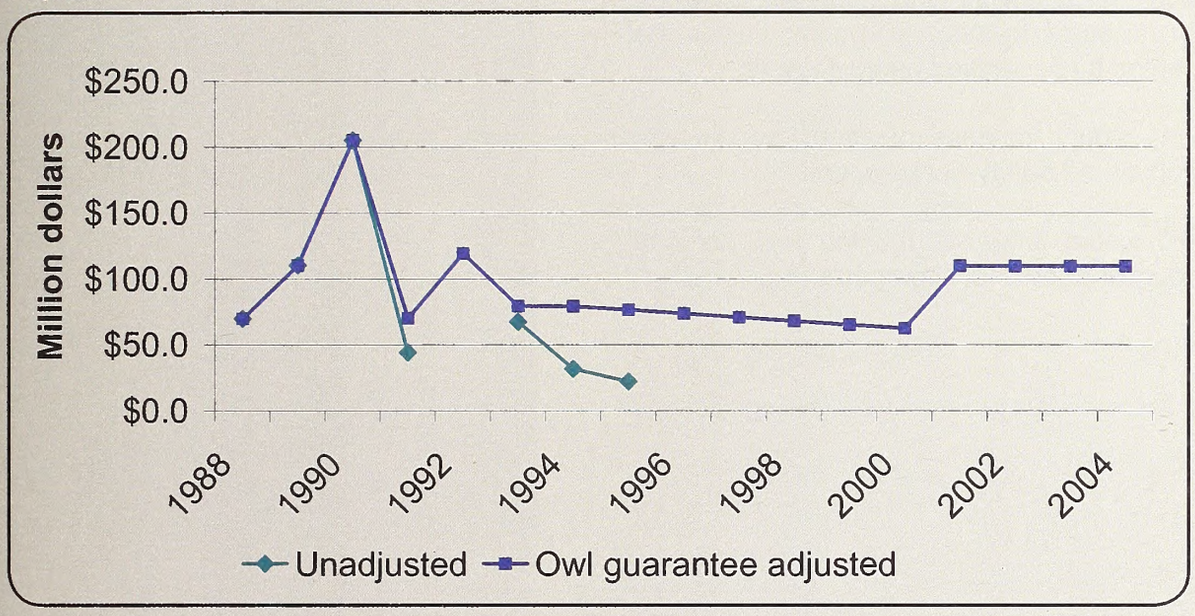
- O&C receipts are distributed to the counties by a formula that is independent of from which specific county the timber is actually harvested.

Owl Guarantee adjusted payments and unadjusted payments (what would have been payments to county governments based on timber receipts) are shown in Figure 24. It is important to note that the Secure Rural Schools payments are based on the highest three years of timber receipts, constituting an automatically increasing gap of payments to counties in years where timber harvests are lower.

It is not known how the owl guarantee adjusted payments have affected overall county financing. In the short-term, a guaranteed amount is likely to have a stabilizing effect. The Secure Rural Schools legislation, however, expires on September 30, 2006. To the extent that the actual harvest levels fall below planned allowable sale quantity levels, federal revenue sharing would also be reduced beginning in fiscal year 2007. The long term stability of the payments is uncertain. Without new congressional action, western Oregon counties will need to address a projected $70 to $100 million plus in revenue shortfall.

BLM data without guarantees were only reported until 1995 (Northwest Forest Plan: the First Ten Years, Rural Communities and Economics). Owl guarantee payments are those payments compensated to counties to supplement reduced timber receipts, and include safety net payments, and Secure Rural Schools Self Determination Act payments.

Figure 24 – Oregon and California Railroad and Coos Bay Wagon Road Payments to Plan area counties.*



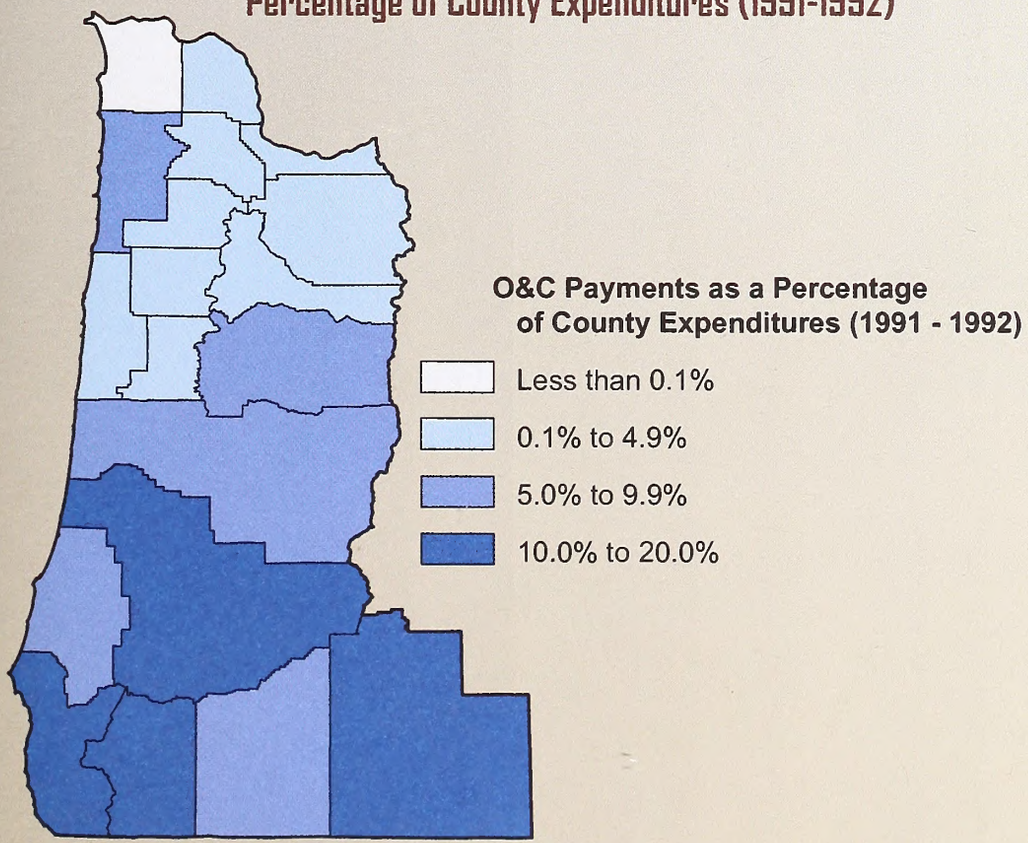
**BLM data without guarantees were only reported until 1995 (Northwest Forest Plan: the First Ten Years. Rural Communities and Economics). Owl guarantee payments are those payment compensated to counties to supplement reduced timber receipts, and include safety net payments, and Secure Rural Schools Self Determination Act payments.*

Payments in Lieu of Taxes

In addition to receipts from timber harvest on O&C lands, counties receive payments in lieu of taxes based on the amount of eligible federal land (generally public domain lands) in each county. Payments in lieu of taxes have generally not been affected by reduced harvest levels because the owl guarantee legislation and the Secure Rural Schools Act mitigated the loss in timber revenues.

The payments in lieu of taxes for Oregon have averaged between one $1.0 million and $2.5 million over the last 15 years (Northwest Forest Plan: the First Ten Years, Rural Communities and Economics).

Figure 25 – Federal Lands-related Payments (1995) to Counties as a Percentage of County Expenditures (1991-1992)



Management Opportunities

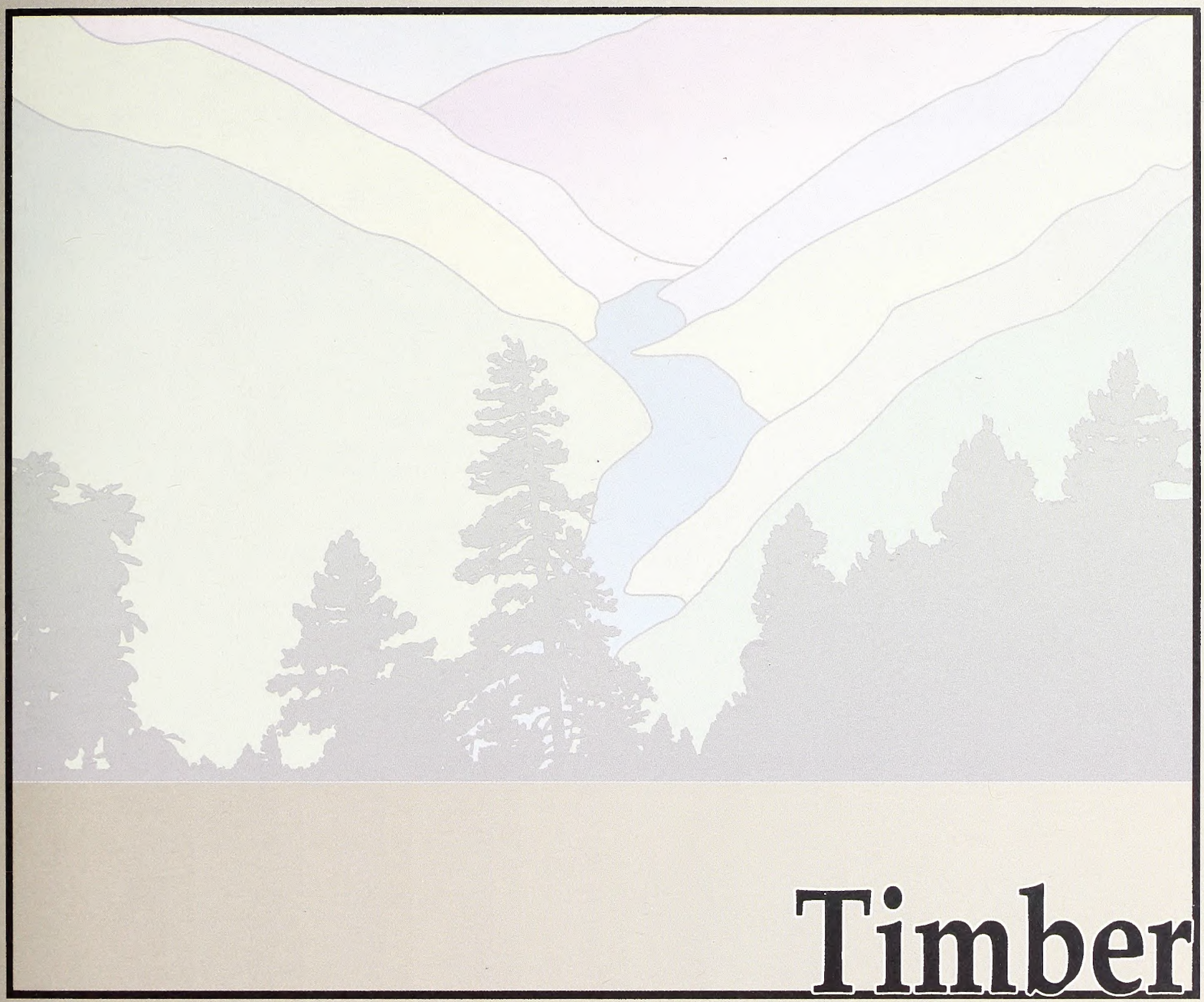
BLM can directly influence the supply levels of natural resources to meet the goal of contributing to tribal and non-tribal community economic, social and environmental well-being. Resources/programs include:

- Forestry services including fuels management, planting, pre-commercial thinning and other silvicultural and restoration efforts that create jobs and personal earnings in local communities.
- Timber Harvest.
- Special forest products output levels.
- Utilization of slash/residue from silvicultural/range/fuels treatments for biomass and energy production wherever appropriate.
- Recreation opportunities.

Consider the mix of forest products and resource uses that best meets the needs of the multiple and diverse communities in each District For example, strategic management of silvicultural practices, and increased allowable sale quantity levels would benefit those counties with communities that have been more adversely affected by decreased harvest levels.

- Increasing timber receipts would increase payments to counties facing the potential loss of current safety net payments.

- Increasing harvest levels would influence the job and personal earnings component of local and regional economics.



Timber

Key Points

- Choices made in the plan revisions could substantially affect timber production in western Oregon.

- Current harvest levels were found to be sustainable during the completion of the RMPs. The current harvest mix of thinning and regeneration cutting is different than planned and has not been analyzed for sustainability.

- Litigation remains a substantial influence affecting the attainment of commercial harvest anticipated under the Northwest Forest Plan, particularly harvest of older timber and fire salvage.

- As previously harvested stands approach or reach harvest age, new opportunities are emerging for management of younger stands through commercial thinning or modified rotations. Opportunities may vary substantially from district to district.

Timber

Current Condition and Context

Old growth forests in Western Oregon comprise approximately 8 million acres, of which the BLM manages approximately 357,000 acres on six districts (Figure 26).

Portions of the planning area vary widely containing a variety of different forest types with Douglas fir forest being the most common. There is an increase in mixed conifer and hardwood forest in the Klamath Province, with the maximum variety in the Medford district and Klamath Falls field office.

A wide variety of conditions exist upon the landscape, both in types of forests and general ages. While considerable areas have been affected by past fires and other natural disturbances, much of the landscape has been altered by a variety of management and harvest activities. Shown below (Figure 27) is the harvest level over a number of decades. This has resulted in both young managed stands and stands modified by partial harvest.

BLM timber harvest was historically fifteen to twenty percent of the total timber harvested in western Oregon. Under the current plan, BLM contributes less than three percent.

Figure 28 shows the approximate age class distribution for the western Oregon as of 1992 by district. Current age class data is being quality checked and receiving final verification and will be available for use in the planning process.

Figure 29 shows most of the lands in Western Oregon BLM management are reserves, with only a small percentage in lands with a calculated harvest level (allowable sale quantity.

The Districts currently vary from 83% of the lands reserved to 50% of the lands reserved, with the western Oregon average at 77% reserved. Of the old growth stands (200+ as of 1992) on western Oregon BLM, 83% are reserved from harvest.

Figure 26 – Forested Acres by District

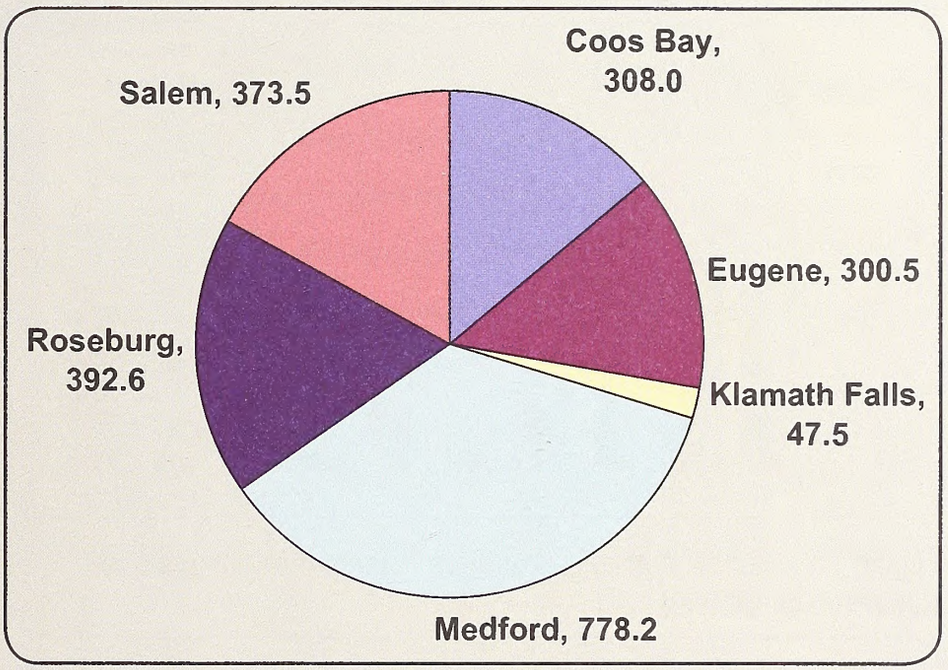


Figure 27 – BLM Sales over the Last Five Decades

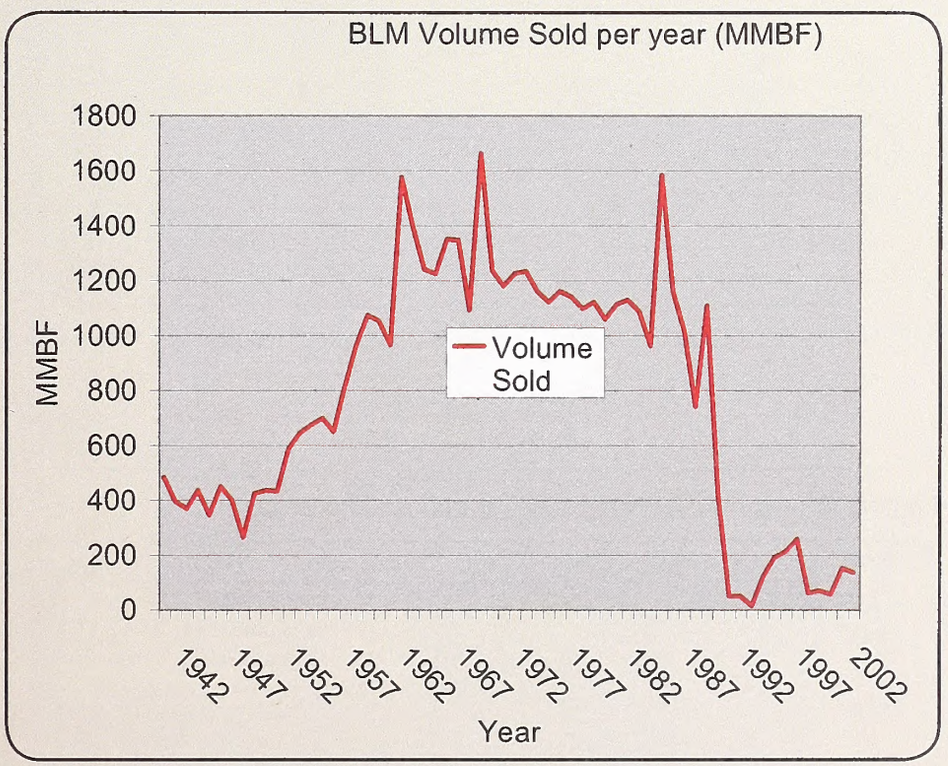


Figure 28 – Age Class Distribution by District

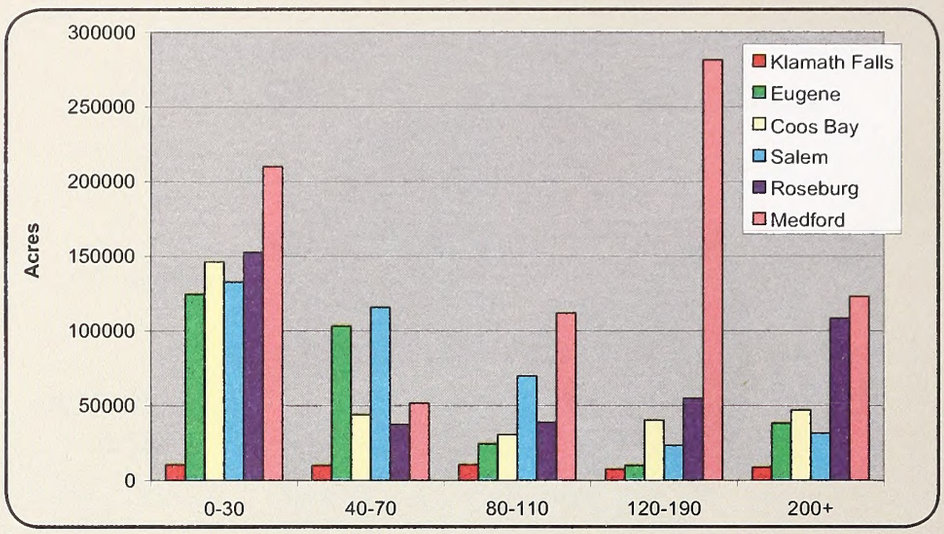


Figure 29 – Acres of Matrix, Adaptive Management Areas and Reserves by District

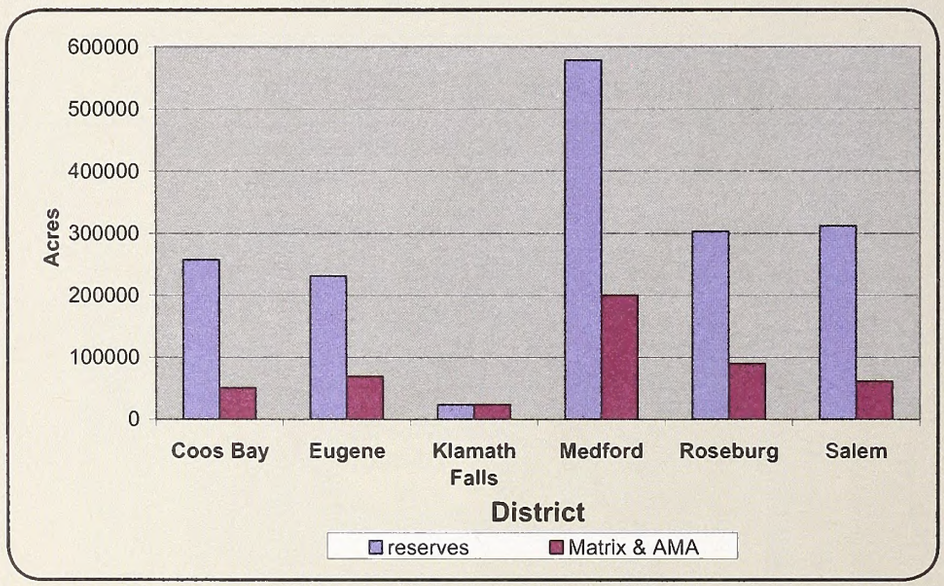
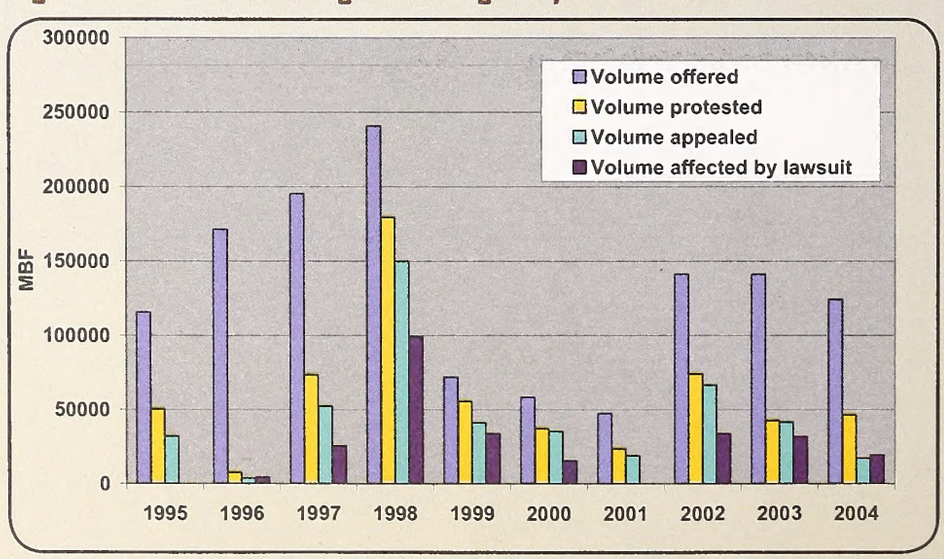


Figure 30 – Sale Offerings Challenged by Fiscal Year



The RMPs have not provided the stable and predictable level of harvest supporting timber dependent communities as promised in the plan.

Ability of BLM to Achieve Current Management Direction in the RMPs

There has been a continuing pattern of protest, appeal and litigation surrounding the harvest of timber from BLM lands. Figure 30 shows the percentage of sale offerings which have been challenged either through administrative or judicial appeal.

A large percentage of the sales offered for bid have had some level of either administrative challenge or litigation challenging the sale. In addition, general challenges to NEPA adequacy, and challenges to the biological opinions for species listed as threatened or endangered which affect numerous sales have influenced the harvest level over the life of the plan. In response to litigation, regeneration harvest of older timber and treatments in the reserves have not been completed as anticipated in the RMPs while the federal agencies have responded to the court rulings.

The level of challenge to timber sales has varied considerably by district, and sale type. Sales of timber in young managed stands have been challenged less often.

Summary of the Harvest Activities over the Life of the RMPs

Over the 10-year life of the plan, both the harvest levels and the type of sales offered have differed from those anticipated in the RMPs. Although one of the goals of the plan was to produce a stable and predictable level of harvest for the federal lands, this has not been achieved as anticipated.

Generally, there has been less harvest of older timber than planned, more intermediate

harvest in younger ages than projected, and less work in both the Adaptive Management Areas and Key Watersheds than projected.

Harvest Results and Sale Levels

A review of the history of offerings over the ten years from 1995 through 2004 suggests three distinct phases of implementation.

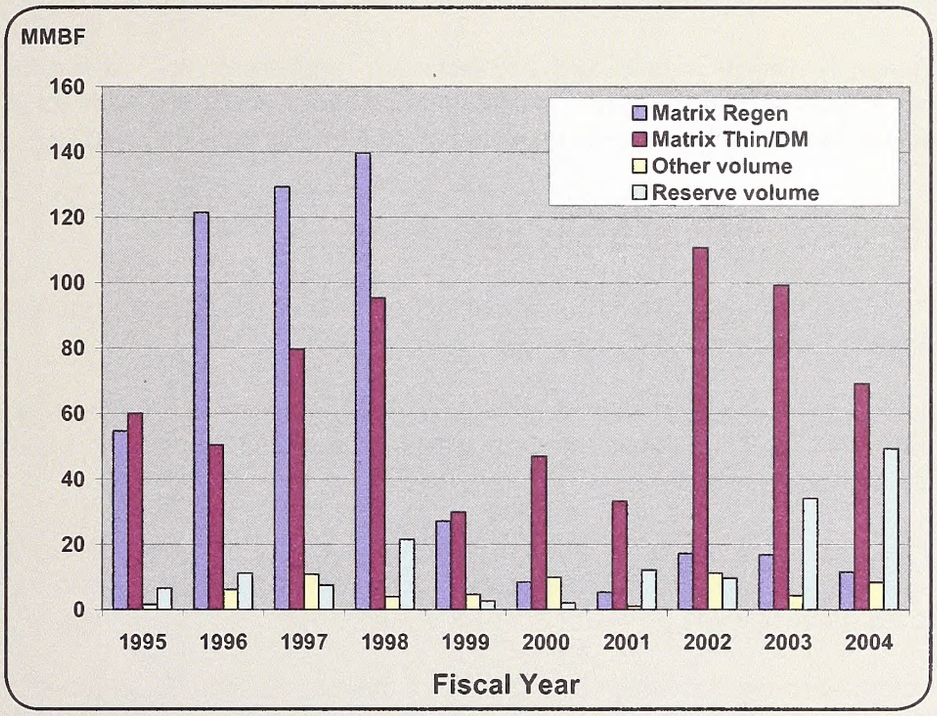
1. The years from 1995 through 1998 were a ramp up period in which the various processes under the plan were completed such as watershed analysis, chartering of the Resource Advisory Committees, etc. Types of harvest, and volumes offered were in reasonably close alignment to those anticipated in the RMP, as shown the Third Year Evaluation.

2. From 1999 through 2002, effects of the Survey and Manage standard and guidelines caused delays and reduction in offerings during the development of survey protocols, management recommendations, etc. In addition, a group of lawsuits collectively known as the Pacific Coast Federation of Fishermen's Association cases reduced the ability to offer and award sales while the agencies responded to the court's rulings.

3. Starting in 2003, offerings increased, but a shift in harvest types occurred with an increasing level of intermediate (commercial thinning and density management) rather than regeneration harvest occurring.

Figure 31 shows the statewide offering by general harvest type and year. Other volume is from various types such as rights-of way, fire salvage and mortality salvage. The reserve harvest is not a component of the allowable sale quantity. The lack of harvest in 1998 to 2001 was mainly the result of litigation. The increase in thinning starting in 2002 was the result of BLM's adjustment in management while the federal agencies responded to the various court rulings.

Figure 31 – Volumes Offered by Year and Type of Sale

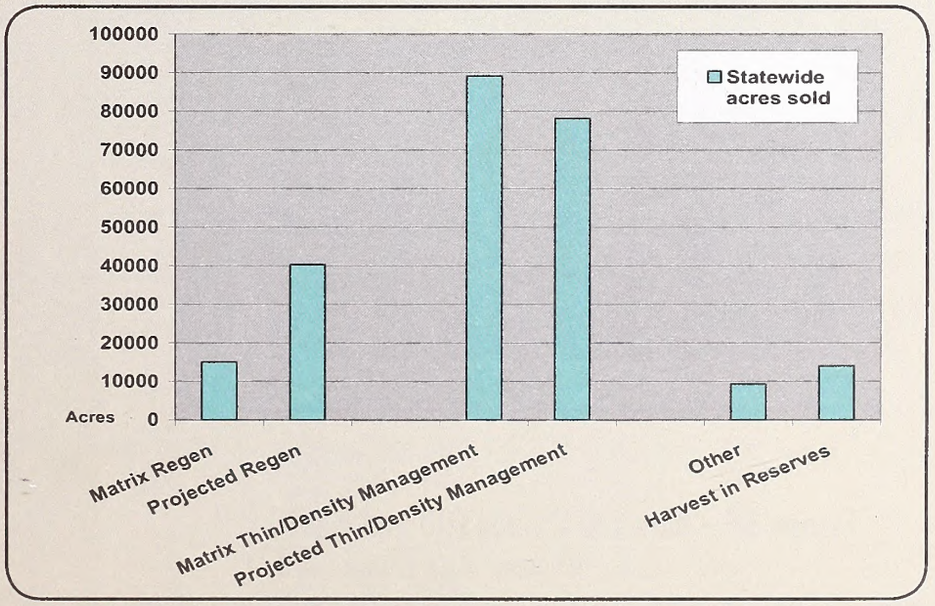


Relationship of harvest mix to that projected

As projected in the plans, the anticipated harvest levels were shown to be sustainable during the completion of the district's RMPs, however, the current harvest mixes being implemented by the districts are substantially different from those analyzed in the environmental impact statements for the RMPs.

Figure 32 shows the relationship of the western Oregon RMP actual acres offered for sale by type of harvest shown next to the harvest projected at

Figure 32 – Acres Sold from 1995 to 2004 Relative to 10-year Projections



the start of the RMP. Note that there were no firm projections for thinning or density management in the reserves.

Generally, districts were under the projections in regeneration harvest, but the commercial thinning/density management numbers were mixed, with some districts considerably over the projected acres for commercial thinning.

Harvest levels actually completed

Figure 33 below shows the volume of timber harvested by year contrasted against the volume offered for sale.

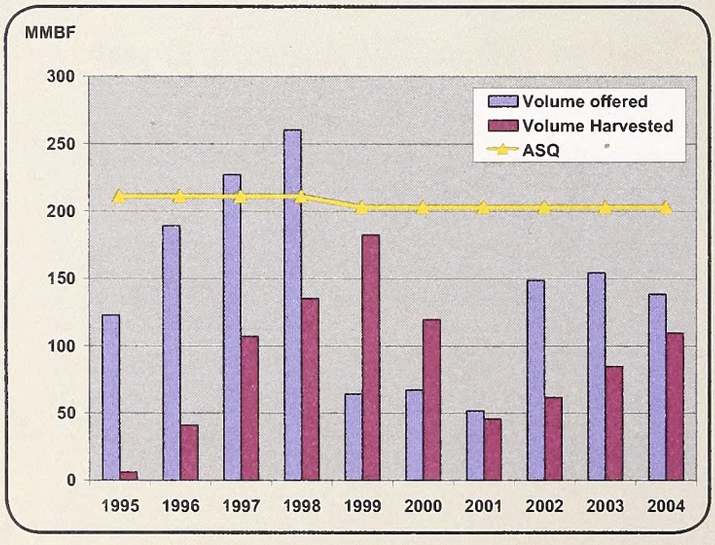
In addition to the total volume being less than projected starting in 1999, there has also been less volume harvested than sold resulting in lower timber revenues and jobs.

The impacts of various lawsuits during the life of the plan have delayed sale awards, and in some cases prevented award of sales resulting in the lower harvest levels.

Volume actually harvested over the life of the plan is about 63 percent of that offered. Typically, the volume actually harvested by year varies due to market conditions and the purchaser's plans. The large discrepancy between the volume offered and volume harvested over time in the above chart reflects the problems with plan implementation rather than the traditional market factors.

Of particular concern is the salvage volume from large fires and other natural disturbance events that is being sold but not harvested.

Figure 33 – Volumes Offered Versus Harvested by Fiscal Year



Management Opportunities

Young Stand Management

The western Oregon districts have a large number of acres of young stands, as shown below on Figure 34. Many of these stands will be at an age and commercial stand size in the next 10 years to begin or continue density management.

The dry forest districts are dealing with the effects of fire exclusion and the buildup of stand densities, while the northern districts have large numbers of dense young stands which will begin to stagnate without additional management such as an extensive thinning program.

Many of these younger stands are located in reserves. Many of these stands have received intensive practices to regulate stand density and improve growth and yield for timber production goals. For stands in Late Successional Reserves, recent research indicates an ongoing need to actively manage stands at the proper times in order to control stand density and develop the desired stand characteristics. In some cases active management may need to occur in stands over 80 year of age.

Salvage of Timber Following Fire, Storms or Insect Infestations

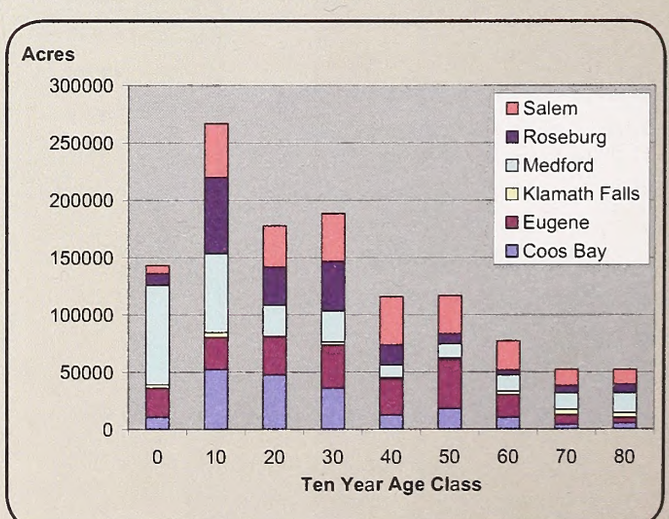


Figure 34 – Acres of Stands (80 and less) by 10-year Age Class (1992)

Language in the RMPs should be clarified regarding timber salvage intentions, particularly as the result of large fires.

Silviculture

Key Points

- A wide range of silvicultural systems is needed to meet timber production, habitat development, and riparian management objectives.
- Silvicultural systems will need to vary between districts to accommodate the diverse physiographic provinces across the planning area.
- Implementation of silvicultural treatments during the proper phase of forest stand development is important for attainment of management objectives.
- Choice and amount of each silvicultural system applied to the forest stands has substantial effects on forest growth and yield, workforce requirements, economic return, and habitat development.
- The numbers and types of retention trees affect economic efficiency and regeneration harvest costs and worker safety.

Silviculture

Current Condition and Context

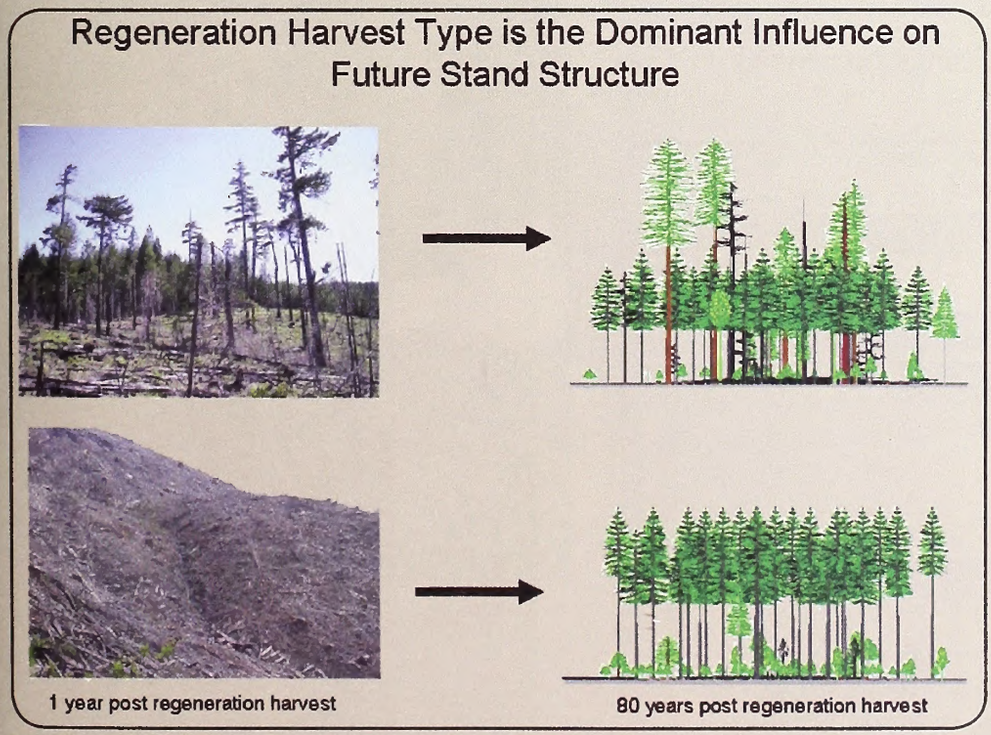
Silvicultural Systems

A *silvicultural system* is a planned program of sequential stand treatments to achieve specific objectives. It consists of a *regeneration* or *reproduction* timber harvest method to foster new seedling establishment (clearcut, shelterwood, selection, etc.), a regeneration method - *artificial* (planting or seeding), *natural,* or a combination of both - and the subsequent intermediate treatments (maintenance and protection, thinning, etc.).

The regeneration timber harvest method used has such a dominant effect on subsequent stand structure that silvicultural systems are named by the method.

The choice and amount of each silvicultural system applied to the land base has substantial effects on forest growth, commodity harvest, economic return, wildlife habitat development, resource protection and BLM workforce requirements (Figure 35).

Figure 35 – Influence of Regeneration Harvest Practices on Future Stand Structure



The timing of the application of individual silvicultural practices within a silvicultural system is important if management objectives for timber, wildlife habitat and economic returns are to be met.

Silvicultural Practices

Silvicultural Practices are the individual management actions implemented to meet specific land use objectives within the context of a silvicultural system. Silvicultural practices fall into three major categories and several subcategories:

- Reforestation
  - site preparation
  - tree planting
  - maintenance & protection
- Growth & Value Enhancement
  - precommercial thinning and release
  - pruning
  - fertilization
    - brushfield conversion
    - commercial thinning & density management
- Regeneration Harvest

Allowable sale quantities are based on the assumption that necessary silvicultural practices contributing to reforestation and growth enhancement are implemented on Matrix and Adaptive Management Area land use allocations within specific phases of forest stand development.

Retention trees negatively affect future stand growth and yield from a timber commodity perspective as well as economic return.

- Commodity timber volume is reduced by not harvesting the retention trees
- The growth of the new tree regeneration is reduced by the preemption of site resources by the retention trees.
- BLM and timber sale purchaser costs increase as the number of retention of trees retained increases or variability of retention increases e.g. distribution of individual retention trees versus retention blocks such as riparian reserves.
- Arrangement of retention trees potentially affects the feasibility of certain stand maintenance and growth enhancing practices, e.g. aerial application of fertilizer or herbicides.

Accomplishments

On a western Oregon wide basis, silvicultural treatment acreage has been less than predicted (with the exception of

tree planting, maintenance and protection, and commercial thinning and density management) due to:

- Litigation impeding timber sales, especially regeneration harvests.
- Overestimation of certain treatment opportunities.
- Survey and Manage and Aquatic Conservation Strategy issues.
- Insufficient genetically improved trees seedlings available for planting.
- Lack of herbicides as a management tool has limited some opportunities for brushfield conversion.

Reforestation of wildfire areas on the Medford district offset the lower than planned accomplishments due to less than planned regeneration harvest on all districts (Figure 36).

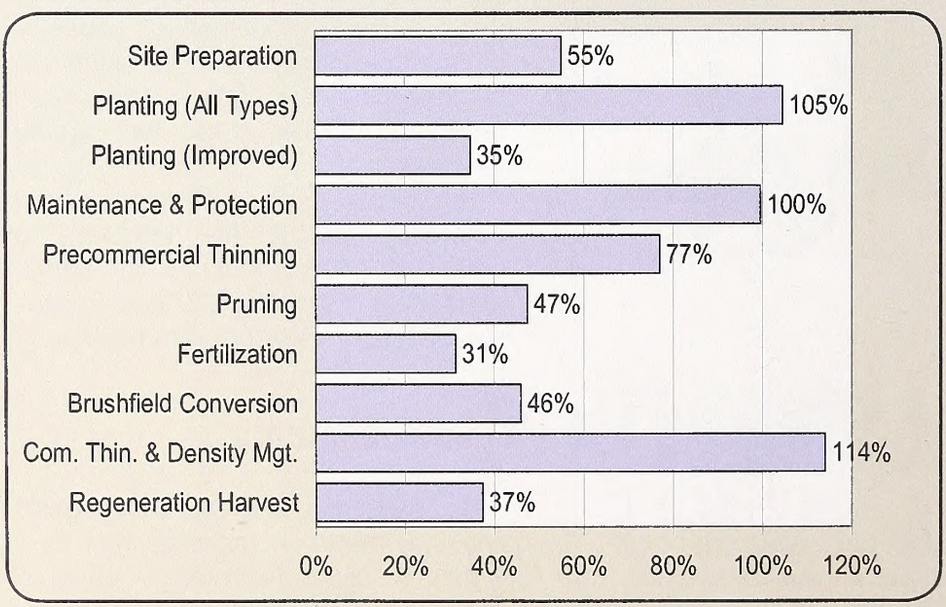
Reforestation

Reforestation consists of an interrelated series of activities following a regeneration harvest or natural disturbance such as fire, usually beginning with site preparation, followed by tree planting, and then maintenance and protection of the planted tree seedlings.

The Bureau of Land Management portion of the overall level of reforestation activities in western Oregon based on the number of tree seedlings planted has declined from about fourteen percent in 1991 to about three percent in 2001 as a result of the management direction of the 1995 resource management plans.

The objective of reforestation is the reestablishment of desirable tree species following a regeneration harvest or a natural disturbance event such as wildfire.

Figure 36 – BLM Silvicultural Practices Accomplishments as Percent of Planned FY 1996 - FY 2004



Site preparation

Site Preparation reduces logging slash and post harvest residual vegetation (through prescribed fire and/or mechanical, manual and chemical means) to provide physical access for tree planting.

Tree Planting

Trees are usually reestablished on a site through planting, although natural regeneration is also utilized and augmented by planting where necessary to meet management objectives.

Planting of tree seedlings developed through genetic breeding programs for improvement of tree growth and resistance to disease is an assumed component of the current resource management plans' allowable sale quantity calculations.

Genetic breeding programs had been developed for Douglas-fir, sugar pine, western white pine, western hemlock and noble fir prior to the current resource management plans.

Tree Planting

A recent evaluation of the BLM Oregon genetics program determined the following:

- Douglas-fir tree improvement expenditures should be minimal pending the outcome of the resource management plan revision.
- Existing BLM seed orchards have the biological capability to produce improved seed in excess of current or probable five-year reforestation needs if planned regeneration harvest levels of the resource management plans were implemented.
- Breeding work on disease resistant sugar pine and western white pine should continue at current levels.
- Breeding work on disease resistant Port-Orford cedar should continue at current levels pending results of a further targeted evaluation in progress.

Maintenance and Protection

Maintenance and protection treatments occur after tree planting or natural regeneration to promote the survival of desirable trees, or protect trees from adverse elements such as weather, animals, insects and disease.

Treatments may include using biological, mechanical, manual, chemical methods, or a combination of methods. Examples include: mulching, brush/hardwood cutting, and leader protection (tubing), pruning and herbicide application.

Herbicides have been unavailable during the resource management plans period due to a court ruling in 1984. Reforestation success has not been substantially affected, but the ban has resulted in relatively high reforestation costs compared to those incurred by private and state forest managers.

Growth & Value Enhancement

BLM's level of growth and value enhancement activities have traditionally fluctuated due to swings in available funding.

Opportunities depend on current number of acres of stands suitable for a particular treatment that originated from a past harvest or natural disturbance event.

The objectives of growth and value enhancement treatments are the regulation of individual tree and stand growth to increase wood production and quality for commodity outputs, increased economic return or production of desired habitat features.

Precommercial Thinning and Release

Density reduction of non-commercial size trees and/or other vegetation through manual, mechanical or chemical means is the principal objective of the treatment.

Treatments are done in mostly young even-aged stands after the period of high potential of juvenile mortality has passed. They are undertaken to modify stand composition and promote dominance of desirable trees to meet desired future stand structure objectives.

Treatment has been done on a limited basis in mixed aged stands with mixed size classes of trees.

Intensity of treatment varies by land use allocation goals; with higher densities and more uniform spatial arrangements of retained trees being the target in the Matrix, and more variable density thinning in the reserves.

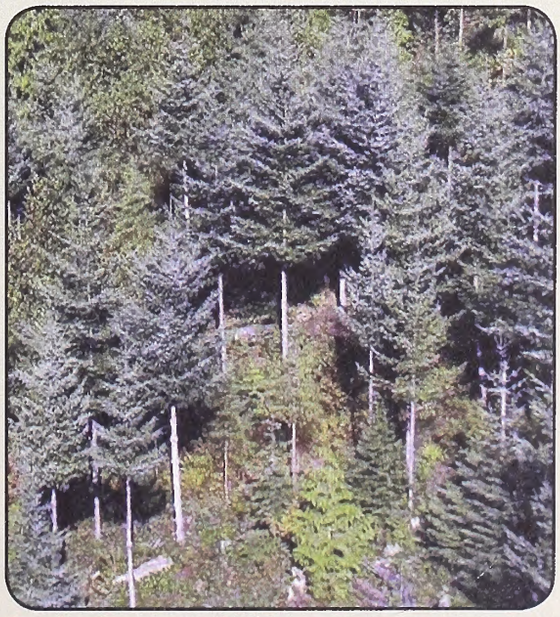
Tree vigor and stand stability are improved through density reduction of both trees and other competing vegetation, which contributes to the maintenance of a wider range of future management options.

Pruning

Pruning removes live and dead branches from the lower bole of preferred trees to enhance future wood quality for commodity purposes.

Pruning for disease prevention/control is considered a maintenance/ protection treatment and is done on limited basis.

Pruning is also being used on a limited basis as a fuels treatment to reduce ladder fuels.



Pruning in young stands

Pruning is not an assumed component of allowable sale quantity calculations since it does not affect timber growth and yield.

Fertilization

Fertilization is the application of nutrients, most often nitrogen, to stands in which the majority of trees generally have average diameters greater than three inches which are at target density.

Fertilization tends to reduce "thinning shock" and increase wood volume production.

Fertilization has not been implemented since 1999 due to litigation over Survey and Manage and Aquatic Conservation Strategy issues.

Brushfield Conversion

Lack of expeditious site treatment and reforestation following disturbance from natural disturbance or regeneration harvest can result in stands that are occupied by shrubs and/or species that prevent attainment of management objectives.

Conversion commonly requires the full range of reforestation treatments described previously to convert brush and/or hardwood dominated sites to conifer dominated sites.

Lack of herbicides as a conversion tool has limited implementation of the practice from both a biological and funding aspect.

Commercial Thinning & Density Management

BLM generally uses the terms *commercial thinning* and *density management* to distinguish between harvest of merchantable trees in the General Forest Management Area (commercial thinning) and harvest in the Connectivity/Diversity Blocks, Riparian Reserves, and Late-successional Reserves (density management).

Intensity of treatment varies by land use allocation goals; with higher densities and more uniform spatial arrangements of retained trees being the target in the Matrix, and more variable density thinning which includes areas of low density in the reserves.

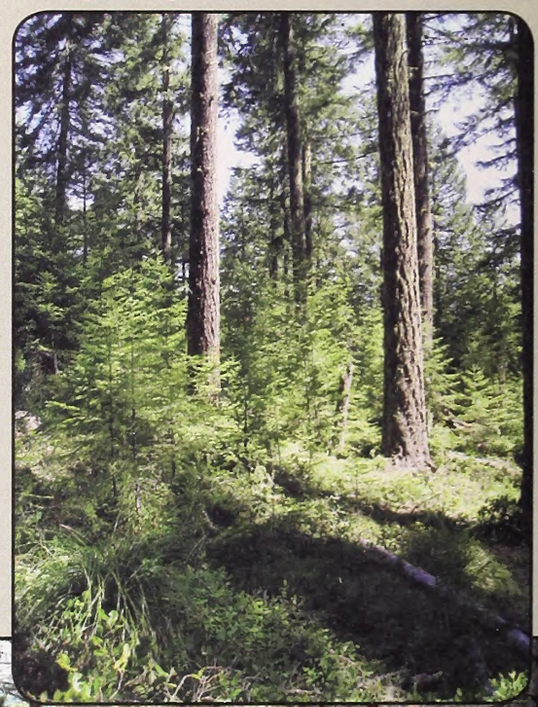
Tree vigor and stand stability are improved through density reduction of both trees and other competing vegetation, which contributes to the maintenance of a wider range of future management options.

Commercial thinning is timber harvest which reduces stand density in stands as young as 30 years-old and up to 120 years-old (depending on the district) so as to maintain or increase individual tree vigor and/or increase total merchantable timber yield over the timber rotation by harvesting volume which would otherwise be lost due to mortality.

The principal focus of commercial thinning is on maintaining tree vigor and high volume production of the dominant stand component. Large remnant overstory trees or small understory trees may be present but their development or maintenance is not the principal objective of the treatment.

Density management is timber harvest which reduces stand density in stands as

Density management.



Commercial thinning.

young as 30 years old and up to 150 years old (depending on the district) so as to maintain or place stands on a developmental trajectory towards late-successional forest condition.

- Density management is a hybrid treatment in that it can combine elements of both commercial thinning and group selection regeneration harvest.

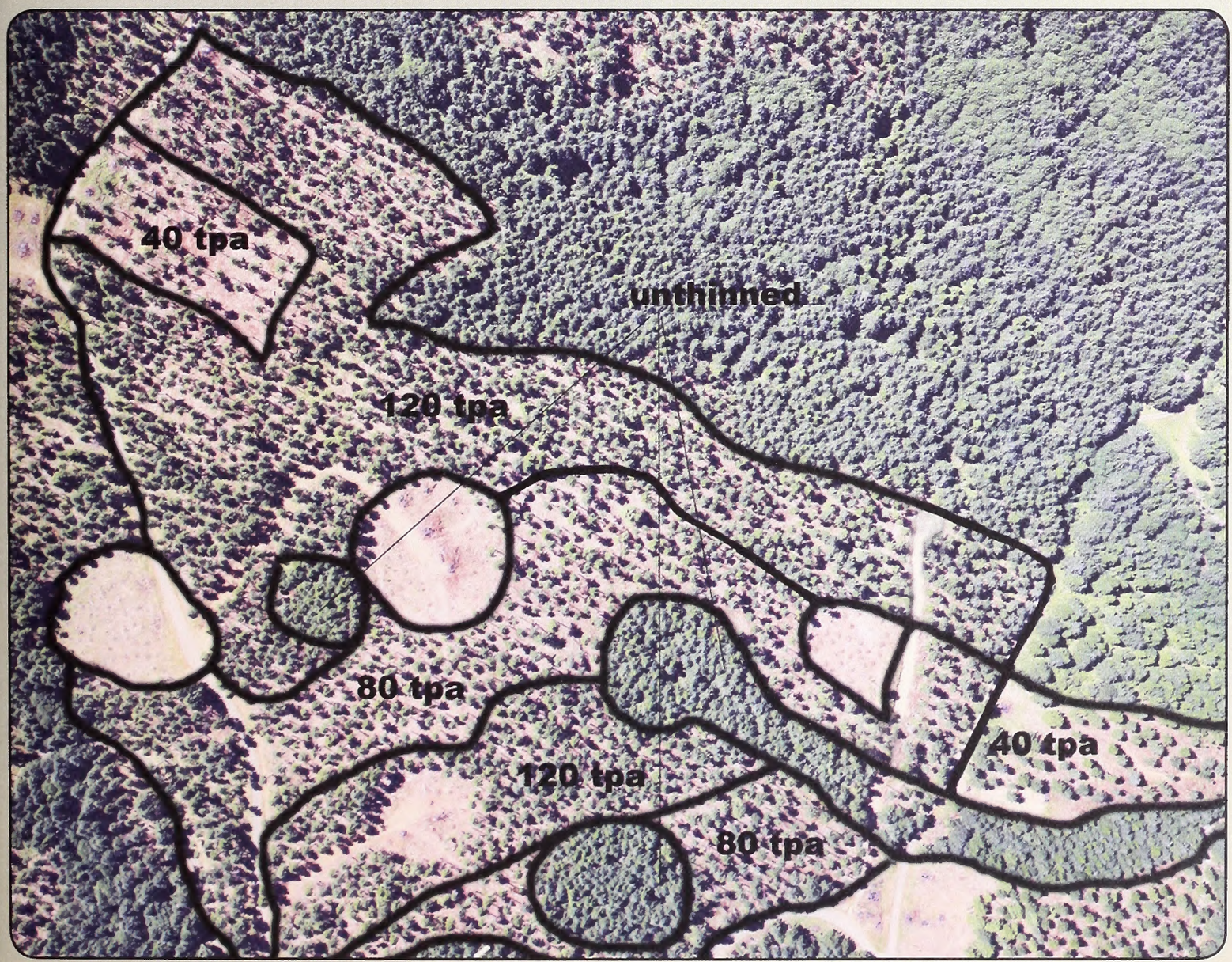
- Density management focuses on the management of all stand cohorts including large remnant overstory trees and small understory trees.

Regeneration Harvest

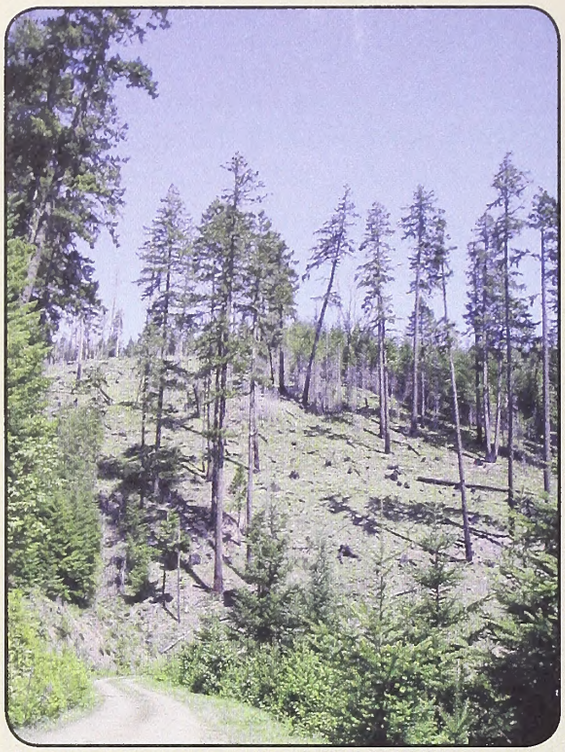
BLM uses the term regeneration harvest to describe the harvest of merchantable trees within an area in order to promote the establishment of tree regeneration (seedlings) through planting and/or natural or artificial seeding.

Type of regeneration harvest varies by land use allocation and is generally described on the basis of number of trees reserved from harvest for wildlife and other ecological objectives or in reference to classical silvicultural terminology for the tree regeneration method, e.g. clearcutting, seed tree, shelterwood, and selection.

Regeneration harvests in the General Forest Management Area of Salem, Eugene, Roseburg, Coos Bay districts and the Northern General Forest Management Area land allocation of Medford district can best be described



Variable-Density Thinning including low density areas and patch cuts to foster new tree regeneration and understory initiation.



Regeneration harvest with leave trees.

as a modified seed tree harvest based on the number of retention trees reserved from harvest.

Regeneration harvests in the Connectivity and Diversity Block land use allocation of Salem, Eugene, Roseburg, Coos Bay and the Connectivity and Diversity Block portion of the Northern General Forest Management Area land allocation of Medford can best be described as a modified or irregular shelterwood harvest based on the number of retention trees reserved from harvest.

Regeneration harvests in the Southern General Forest Management Area of Medford district and the General Forest Management Area land allocation of Klamath Falls field office can best be described as a modified shelterwood–group selection harvest based on the number of retention trees and maximum size of "patch" cuttings.

Trends and Forecasts

Reforestation

- Future opportunities depend greatly on the level of regeneration harvest successfully implemented and the amount of area affected by stand replacing wildfires.

- Opportunities may increase for reforestation treatments in density management harvest units to augment and maintain understory natural regeneration for acceleration of late-successional forest structure development.

Growth and Value Enhancement

- Commercial thinning and density management opportunities are increasing as more managed stands created as a result of regeneration harvest since the 1960s grow to merchantable size. Smaller trees are being utilized for biomass on a limited basis in southwestern Oregon.

- Precommercial thinning and pruning in young even-aged stands will likely decline from current levels as stands created prior to the current Resource Management Plans are treated.

- Fertilization levels could be at resource management plans level or perhaps higher due to lack of implementation since 1999 and new opportunities available in stands recently precommercially and commercially thinned.

Management Opportunities

The silvicultural systems described in the resource management plans and Late Successional Reserve Assessments should be reviewed and revised to reflect new research and operational experience in the last ten years.

Drop the minimum harvest age to allow for shortened timber harvest rotations of existing young-growth (30+ years-old) stands to:

- Substitute for harvest of late-successional stands.
- Regenerate stands with poor potential for commercial thinning due to lack of early density control or where operational constraints make thinning infeasible to achieve the land use allocation goals.

Increase timber harvest from the reserves by increasing density management for the purpose of accelerating stand development towards late-successional forest conditions. Recent research suggests that density management thinning needs to:

- Remove more trees than commonly done.
- Create larger openings with creation of regeneration as an objective.
- Permit flexibility to cut other than the lower tree canopy layers in order to grow managed young-growth stands into potential spotted owl nesting habitat within about 160 years.

Understory density reductions in late-successional stands over 80 years old, which could:

- reduce fuel ladders and loading while recovering commodities
- improve residual tree vigor while recovering commodities

Opportunities could increase for precommercial thinning and release in older and multi-storied stands where desirable understories have been established as a result of past density management treatments or natural disturbances.

Utilization of small diameter timber and logging slash for energy production from biomass is a developing technology. Opportunities for biomass production from BLM managed forests, especially in southwestern Oregon may increase over the next decade.

Retention trees, types and number affect economic efficiency and regeneration harvest costs and worker safety. Retention tree numbers and arrangement could be re-evaluated in reference to retention tree objectives in a landscape context.

Plants and Fungi

Key Points

- Although the number of federal, state and Bureau listed plant and fungi species has increased, management complexity has decreased and flexibility broadened since Survey and Manage Program has been integrated into the Special Status Species Program.

- Rare plant species are not evenly distributed across the landscape. "Hotspots" are areas of high special status species richness and density. These areas provide opportunities to develop focused management strategies.

- Conservation plans provide a management framework and may preclude special status species from becoming federally listed. Conservation plans integrating rare flora occupying similar habitat can streamline planning and management strategies.

- In many watersheds invasive plant populations occupy large portions of the landscape. Activities and treatment priorities generally target infestations by new species and outlier populations of larger weed infestations.

- The number of invasive plant species in western Oregon has more than doubled over the last 10 years.

- The number of partnered projects has grown substantially, providing avenues to meet the goals and objectives for invasive plant management.

Plants and Fungi

Current Conditions and Context

Special Status Species

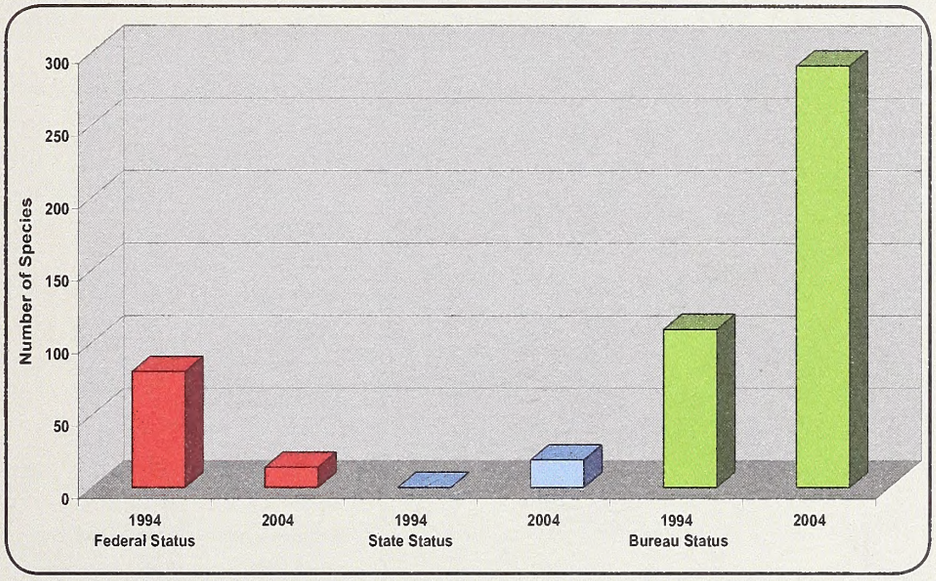
Oregon BLM manages a broad range of plant communities that extends from the Cascade mountains through interior valleys and the Coast Range mountains to the Oregon coast. Over 4500 taxa of vascular species are recognized in Oregon, most occurring west of the Cascades with over 3500 species occurring in the Klamath province.

The number of Bureau special status species, which include federal, state and Bureau vascular and non-vascular (lichens and bryophytes) plants and fungi is 324 which is an increase of 135 species since 1994. Approximately 175 taxa are documented and 159 are suspected on BLM lands (Figure 37).

The Special Status Species Program includes vascular and nonvascular plant and fungi species list is comprised of taxa in three categories:

Gentner's fritillary.

Figure 37 – Number of Special Status Plant/ Fungi Species by Status in 1994 and 2004



*The decrease in the Federal Status category between 1994 and 2004 is attributed to removal of 76 federal candidate species

- Federally Listed - Threatened, Endangered, and Candidate species.
- Oregon State Listed - Threatened and Endangered species.
- Bureau Sensitive and Assessment species.

Special Status Species Program objectives for plants and fungi are accomplished through habitat assessment, pre-project inventories or clearance, conservation measures and monitoring.

The most significant changes in the Special Status Species Program over the past ten years are:

- Addition of 9 new federally listed plant species and 19 state listed species.
- Aecrease in the number of federal candidate species.
- Elimination of Survey and Manage standards and guidelines.
- Increase in the number of nonvascular and fungi taxa.

Federally Listed Species

Currently, there are13 plants listed plants as federal threatened or endangered and one candidate species in western Oregon. Nine species are documented on BLM lands. (Refer to Table 3.)

In 1994 there were four federally listed plant species and 76 federal candidate species. In the mid 90's the U.S. Fish and Wildlife Service reclassified the candidate species group. The result was 9 species merited listing and most of the remaining species were added to the Bureau sensitive or assessment lists. A few that did not merit any special status were removed.

Twelve of the 14 federally listed species are endemic to unique habitat types associated with wetlands, meadows, oak woodlands or rocky

Kincaid's Lupine.

areas. Of the nine species documented on BLM lands, seven are associated with meadows and open areas.

The remaining two species, Gentner's fritillary and Kincaid's lupine, occurs in mixed woodlands and hardwood/conifer habitat. However, over 90% of all sites occupy approximately 1/10th of an acre or less or comprise less than ten individuals.

In general, vigor and size (number of individuals) trends of most populations are stable to declining. The reasons for declining populations are predominantly due to weed and vegetation encroachment.

Federally Listed Species Suspected on BLM lands

Potential habitat exists but there are no documented occurrences on BLM lands within the range of the following species:

- Red Mountain rockcress (Arabis macdonaldiana)
- Applegate's milk-vetch (Astragalus applegatei)
- Golden paintbrush (Castilleja levisecta)
- Big-flowered wooly meadow-foam (Limnanthes floccosa ssp. grandiflora)
- Water howellia (Howellia aquatilis)

Bureau Sensitive and Assessment Species

The number of Bureau sensitive and assessment plant and fungi species has increased by 182 in ten years from 109 to 291 in 2004. Most of this increase was the

Table 3 – Federally Listed Plant Species and Number of Documented Sites on BLM Lands and Oregon-wide

Federally Listed Plant Species	# of Sites on BLM	# of Sites in Oregon	General Trend	Comments
Rough popcorn flower (*Plagiobothrys hirtus*)	3	15	upward	BLM populations are introduced (Roseburg)
Agate desert lomatium (*Lomatium cookii*)	15	38	downward	35 acres total (Medford)
Bradshaw's lomatium (*Lomatium bradshawii*)	8	47	downward	(Eugene Wetlands)
Willamette Valley daisy (*Erigeron decumbens* var. *decumbens*)	5	36	downward	(Eugene Wetlands)
Western lily (*Lilium occidentale*)	2	27	stable	(Coos Bay)
Nelson's sidalcea (*Sidalcea nelsoniana*)	1	89	stable	Located within ACEC (Salem)
Siskiyou mariposa lily (*Calochortus persistens*)	1	1	downward	(Medford)
Gentner's fritillary (*Fritillaria gentneri*)	60	88	stable	3 to 4 new sites found each year (Medford)
Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*)	13	56	stable to declining	6 sites – (Roseburg) 7sites – (Eugene Wetlands)

(Source: ORNHIC 2005)

Cox's Mariposa Lily.

result of two factors: the incorporation of 76 federal candidate species, and 37 former Survey and Manage species which were moved to the special status species list. The 76 federal candidates were vascular plants. Thirty-four of the 37 Survey and Manage species were non-vascular plants (lichen and bryophyte) and fungi.

Over the past ten years the number of Bureau sensitive and assessment nonvascular and fungi species has increased from 28 nonvascular and 1 fungi species in 1994 to 73 nonvascular and 21 fungi species in 2004. Many of the nonvascular plant and fungi species are quite rare and difficult to associate with a narrow habitat type given the current information. In general these species tend to be more wide ranging within conifer forest habitats (Figure 38).

Although the number of special status plant and fungi species has increased overall, management complexity has decreased and management flexibility increased since the extensive processes and protocols under Survey and Manage standards and guidelines were eliminated.

Special Status Species Occurrences

Over the past ten years the number of rare plant occurrences has increased by over 150% percent or 600 sites. This is attributed primarily to the increase in the number of acres field surveyed, improved field botanist expertise, and systematic documentation of sites. The number of acres surveyed over the past ten years swelled to over 1,000,000 acres. Some of the same acres are may be counted two or three times depending on the group of species requiring surveys, and fungi surveys are which were accomplished under the Survey and Manage standards and guidelines (Figure 39).

Approximately 80% of all occurrences and the greatest increase in occurrences are found on Medford district. Approximately 4% occur in Klamath Falls field office.

Figure 38 – Bureau Sensitive and Assessment Taxa in 1994 and 2004

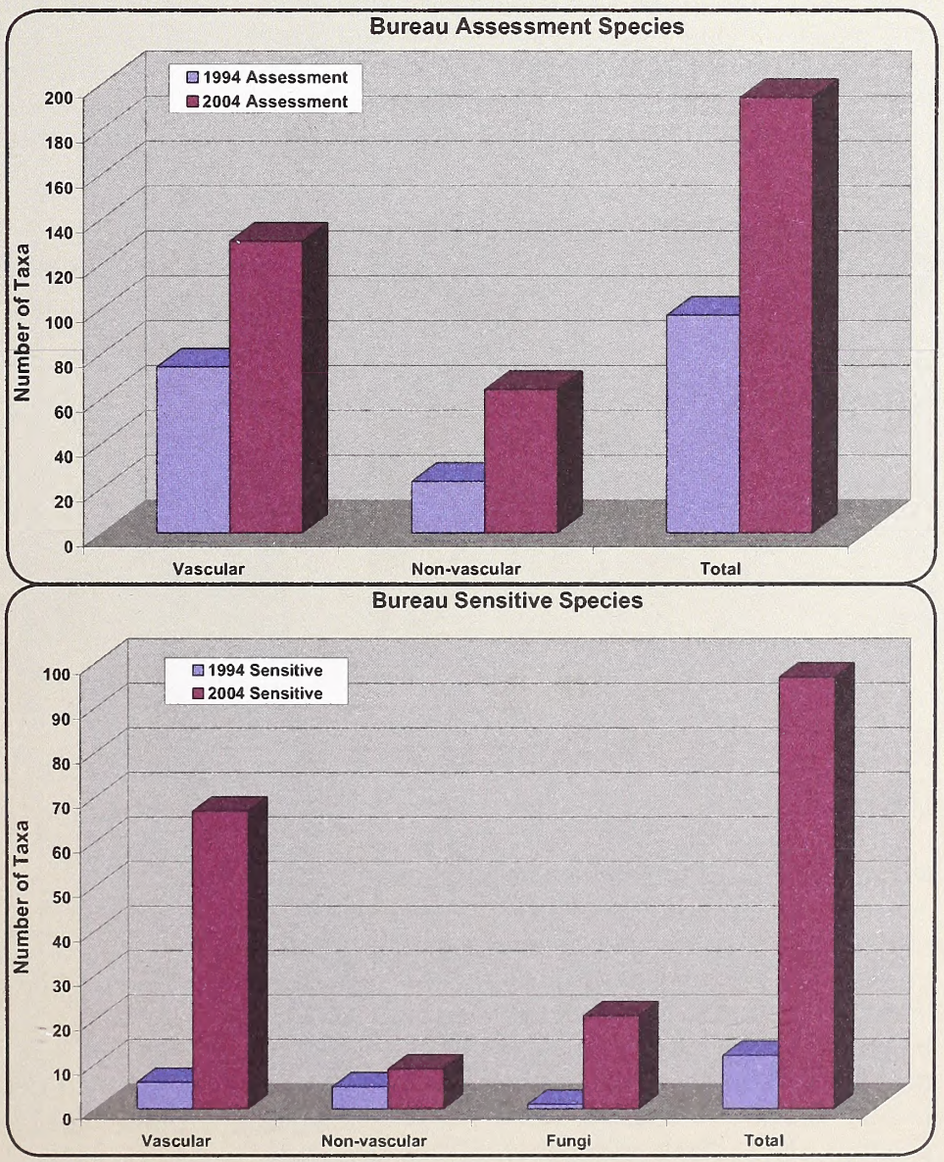
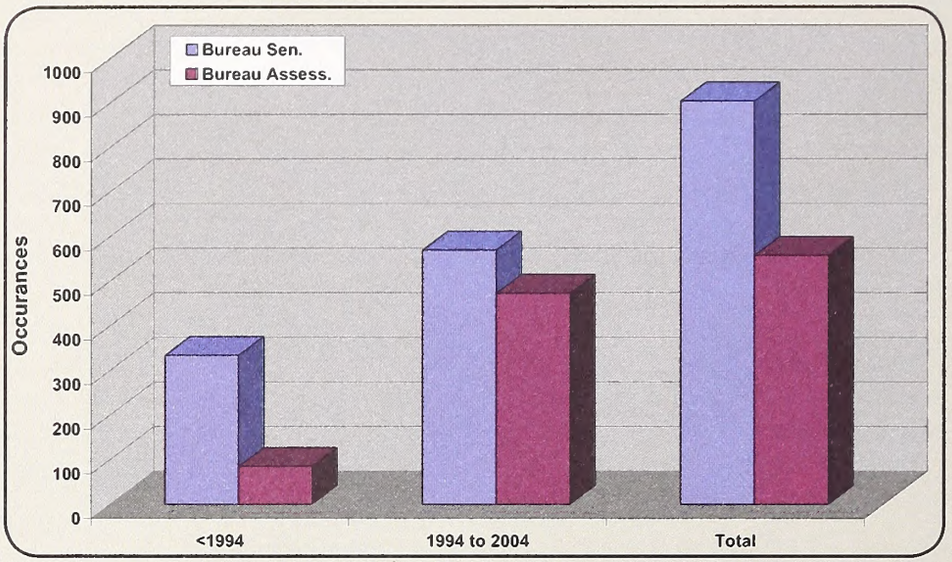


Figure 39 – Bureau Sensitive and Assessment Plant Species Occurrences



While new occurrences can complicate management actions, they can also broaden management options. For example as more surveys are completed, some species may be found to be not as rare as previously thought. Additionally, as more information is collected about rare species, projects and habitat modifications can incorporate the new knowledge into project design.

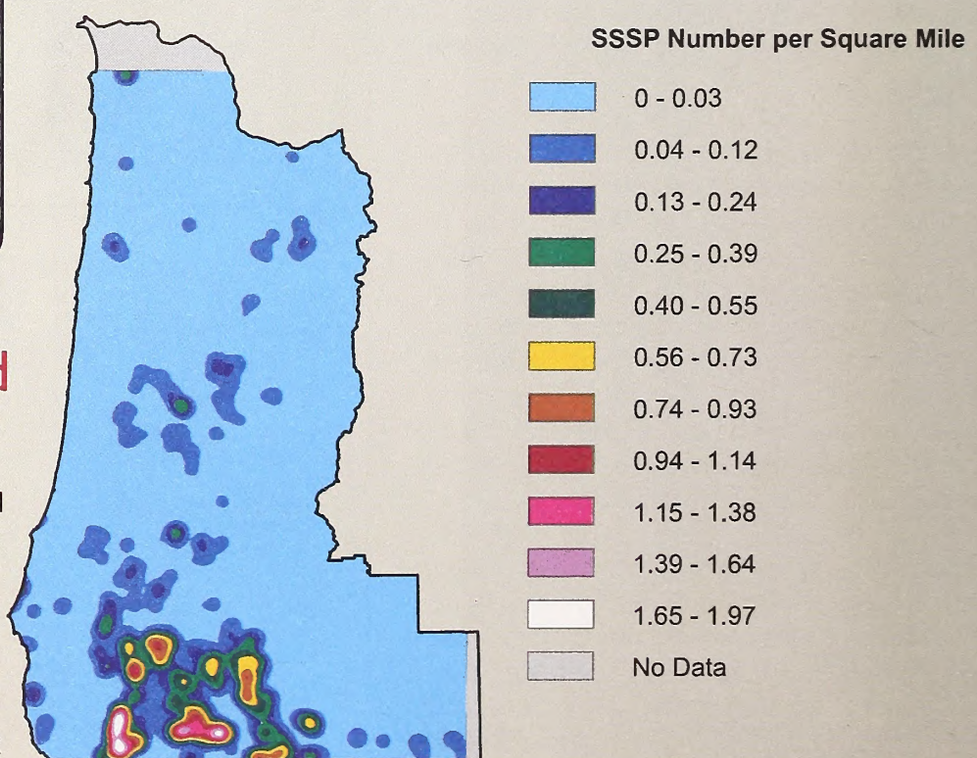
Green's Mariposa Lily.

Rare Plant Species Richness and Density

Rare plant species are not evenly distributed across the landscape. "Hot spots" are areas of high special status species richness and density. As the amount of field surveys increase, "hot spots" and "cold spots" can be mapped and analyzed. "Hotspots" can occur at fine spatial scales such as special habitat features (meadows, wetlands, rock outcrops and other non-forested areas) and at larger geographic scales where high levels of endemism occurs on the broader landscape levels. These areas, large and small, provide opportunities to develop focused management strategies for a range of activities.

Figure 40 shows "hotspots" of rare plant site density on BLM lands.

Figure 40 – Special Status Plant Species Density Analysis



Conservation Plans and Federal Recovery Plans

Progress in developing and implementing conservation strategies, agreements and assessments has resulted in fewer federally listed species over the past 10 years. (See Figure 41.)

Priority is given to rare species with high threats, high risks or high conflicts with human activities. The largest increase in conservation plans over the past ten years is attributed to the 25 Conservation Assessments written by Coos Bay district. These tools play an important role in special status species management and potential recovery for listed species.

Coral-seeded Allocarya.

- Conservation assessments provide baseline knowledge of the species biology, ecology and habitat.
- Conservation agreements are developed between state and federal agencies or the private sector and document actions and responsibilities through voluntary cooperation.
- Conservation strategies identify conservation actions that reduce threats to a species or its habitat and may reduce or eliminate the need to list.
- Recovery plans, developed by the Fish and Wildlife Service with BLM cooperation, define threats, describe conservation actions and establish parameters of a full recovery for a species.

Predominant Habitat Types of Special Status Species

The habitat graph below links special status plant and fungi species with a predominant habitat type, although some species occur in more than one habitat. The habitat graph is compiled from species habitat assignments identified by district botanists (Figure 42).

Conifer forest associates are the single largest group. This group approaches 70 species of which more than 40 are fungi and nonvascular plants. These are particular challenging groups for planning and management because associated habitat types are poorly understood or unknown. Over 90 species are associated with riparian areas and seasonal wetlands which normally receive other protection measures. More than 55 species are found on rock or rocky areas.

Invasive Plants

Invasive plant species are degrading ecosystem health in western Oregon at a rapid rate. Adverse environmental effects created by invasion of non-native species include: displacement of native plants; reduction in habitat and forage of wildlife and livestock; loss of special status species; increased soil erosion and reduced water quality; and changes in intensity and frequency of fires. Invasive plants affect all ownerships and are spread between public and private lands by a wide range of land management activities. In many watersheds invasive plant species occupy large portions of the landscape.

The Noxious Weed Strategy for Oregon/Washington BLM (August 1994) defines the activities of the invasive plant program and is mirrored in other state and federal weed strategies which include:

- planning
- coordination
- inventory
- detection and prevention
- integrated control methods, including restoration
- awareness and education
- monitoring and evaluation

Figure 41 – Number of Recovery and Conservation Plans Pre-1994 and 1994 to 2004

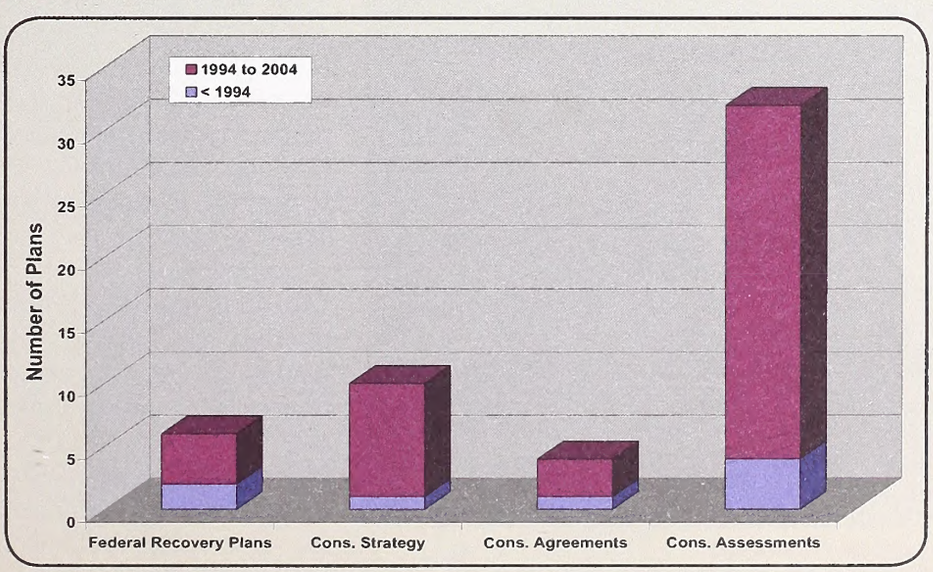
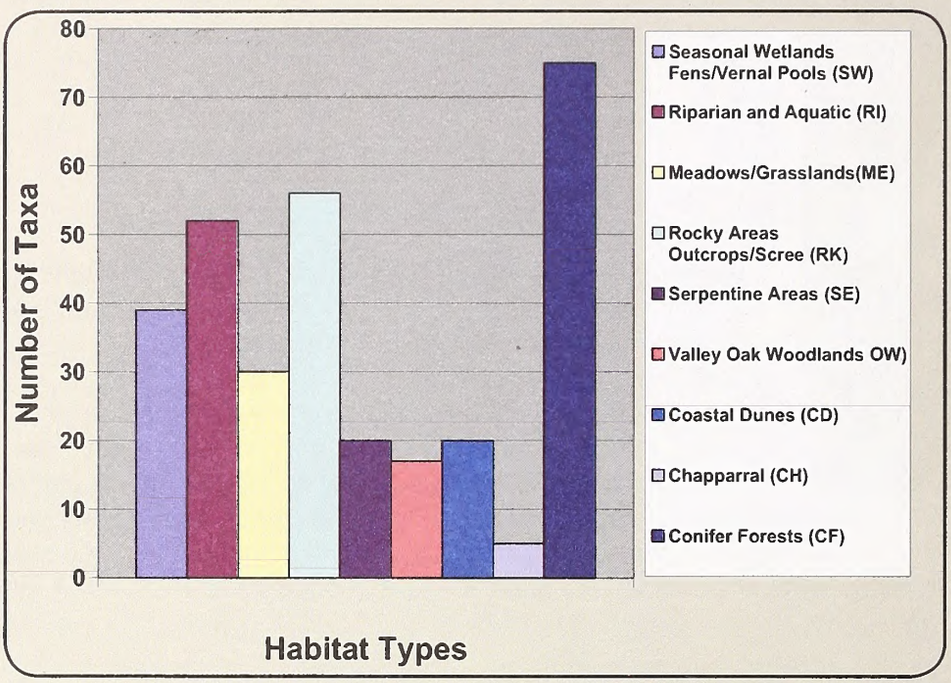
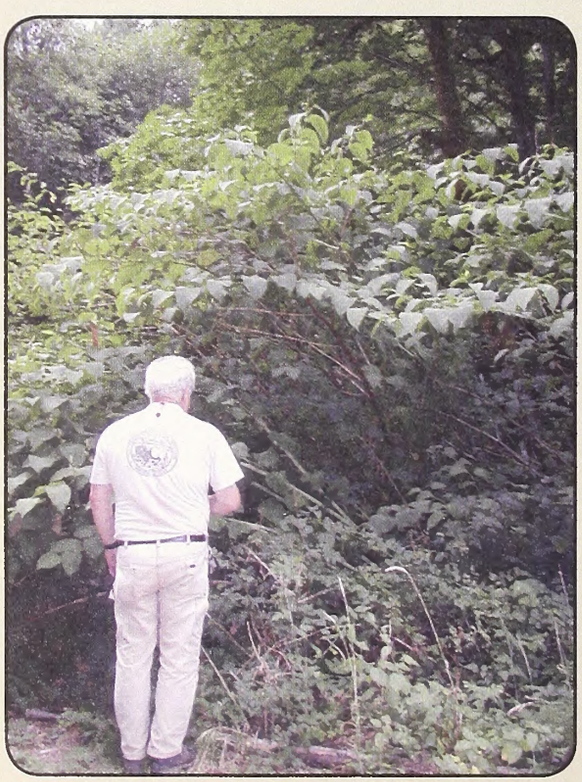


Figure 42 – Number of Special Status Species by Predominant Habitat



The strategy is designed to prevent and control the spread of invasive plants on BLM lands through cooperation with partners. In western Oregon the focus is on reducing adverse effects caused by invasive plants on natural habitats, recreational experiences and reforestation efforts. Activities and treatment priorities generally target infestations by new species and outlier populations of larger weed infestations.



Japanese Knotweed.

Direction from Executive Order No. 13112 of 1999 broadened the scope of the noxious weed program to include additional invasive species.

- Invasive Plant Species – An alien plant species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Noxious weeds are a subset of invasive plant species.

- Noxious Weed – Plant species designated by federal or state law a generally possessing one or more of the characteristics of being aggressive and difficult to manage, parasitic, a carrier or host of serious insects or disease, and being non-native, new to, or not common to the United States.

This executive order increased BLM's ability to manage new invader species. Treating species quickly allows the BLM and partners increased opportunities to prevent serious economic and ecological impacts.

Integrated Weed Management

The districts use combinations of biological, manual, mechanical and chemical tools to control and eradicate weed infestations, including hot foam and goats in Eugene, Medford, Coos Bay and Salem districts.

Small outlying infestations, particularly of new invasive species, are the highest priority for treatment. Eradication is a realistic goal in these situations. It is unrealistic to expect eradication of well established and widely distributed infestations.

False brome infestation along the North Santiam River.

French Broom.

Examples of small infestation eradications due to early detection and rapid response include:

- Diffuse knapweed in Salem and Medford Districts.
- Russian knapweed in Klamath Falls field office.
- Distaff thistle in Medford district.

Most of the on-the-ground control efforts have been directed at infestations of more widely established species where valued resources are being impacted and the threat of further spread is likely. Areas selected for treatments are often along roadsides and in gravel sources, to reduce the amount of spread.

Other high priority infestations to treat include natural areas, habitat for special status species, recreational areas (e.g. Dean Creek Elk Viewing area in Coos Bay district), riparian areas, special habitats and Areas of Critical Environmental Concern.

Treatments are usually repeated at the same site for several years, especially when eradication is the goal. Treatments are usually repeated at a site for several consecutive years and are often directed at more than one target species at any given site. Funding levels and availability of staff, rather than infestation levels, often drives the amount of species and acres treated each year.

Important activities over the past 10 years in western Oregon include:

- The total number noxious weed species treated has more than doubled.
- Active management has increased from 13 species to 32 species.
- The amount of acres treated annually has increased more than six percent and the total treatment exceeds 26,000 acres (The acres reported may be single treatments or multiple re-treatments of the same infestation.)

The brooms (Scotch, Portuguese, Spanish and French) dominate the amount of acres treated in western Oregon BLM districts during the last decade with annual averages of more than 1500 acres. The brooms dominate management activity in all districts except Medford and Klamath Falls field office.

The charts below (Figure 43) are based on total acres treated since adoption of the RMPs for each respective district. This

Figure 43 – Most Commonly Treated Invasive Species - Acres by District

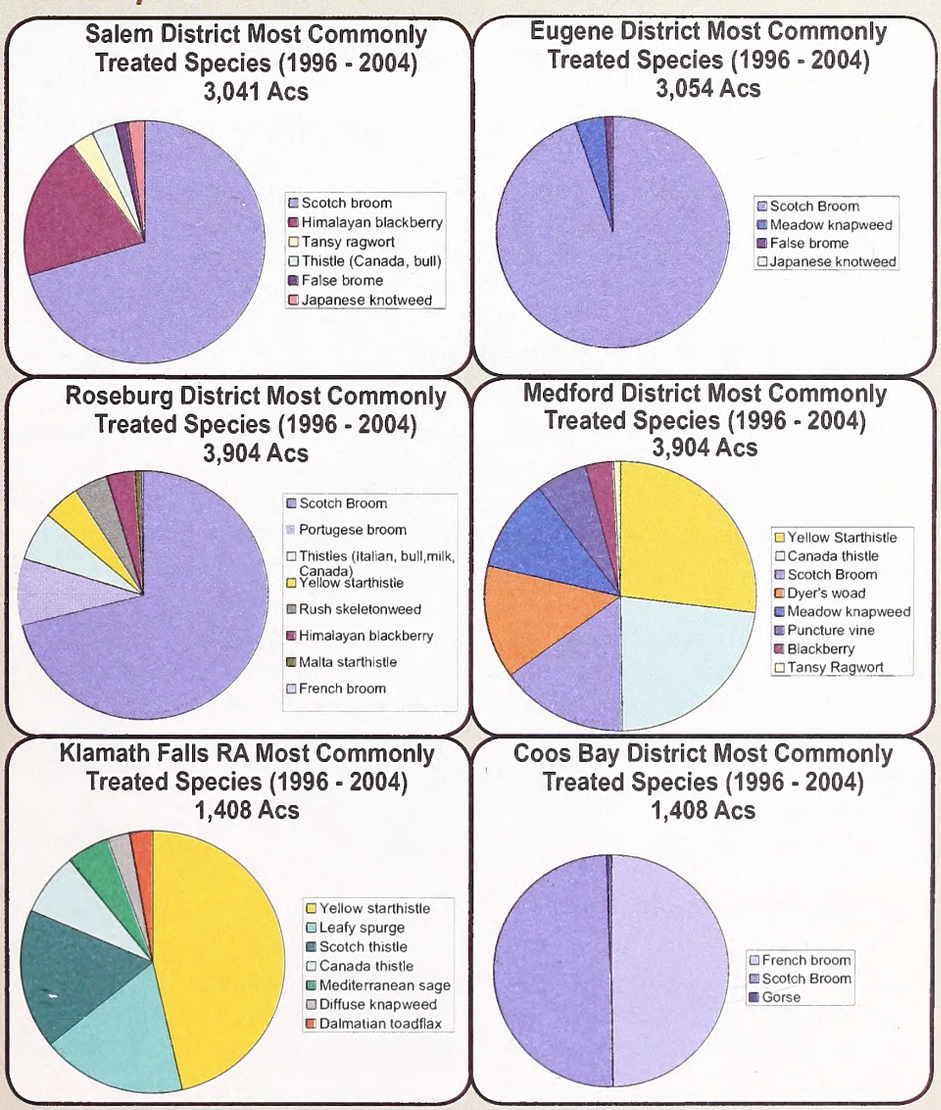


figure shows that the there is a high degree of diversity among the districts in the kinds of species, number of species and the species emphasized in treating invasive species.

Chemical Control

In 1984 the Forest Service and BLM were enjoined from the use of herbicides in Oregon. The injunction remains in force except for the use of Dicamba, 2, 4-D, Glyphosate and Picloram. Currently, the BLM is preparing a Programmatic environmental impact statement to address the use of herbicides on public lands and an environmental report to describe the environmental impacts of using non-herbicide treatments. They are scheduled for completion in 2005 and will direct future use of herbicide and non-herbicide use in future planning efforts.

Biological Control

Biological control, coordinated through the Oregon Department of Agriculture, uses approved natural enemies to invasive plants and has been an important tool since the 1970s. The BLM districts contain the most diverse and active bio-control program in the United States.

- Between 1994 and 2004, about 500 releases have been made on BLM and adjacent lands.
- A total of 29 weed species have been targeted with 69 species of bio-control agents.
- Bio-control projects of importance are being conducted on meadow knapweed, Scotch broom, purple loosestrife, and Dalmatian toadflax.

Coordination and Partnerships

The long-term success of BLM's invasive plant management efforts depends not only on management actions within the BLM but on the collective actions of BLM partners and neighbors. Coordination with other entities is necessary where land ownership patterns are mixed as in the BLM checkerboard.

The number of partnerships has grown significantly from a few interagency agreements to two regional species working groups, six Cooperative Weed Management Areas, and a regional weed partnership with more than 80 member organizations in northwestern Oregon and southwest Washington.

Native Plant Materials

The native plant program, which generally includes grasses, forbs, shrubs and hardwoods, has received broad support from private and public land managers and the general public.

The goal of the native plant program is to use locally adapted native plant materials on public lands when possible for re-vegetation purposes rather than non-native species.

Locally adapted native species maintain the natural resilience of plant communities. Species richness, species diversity and species resilience generally decline when non-native species invade landscapes.

Districts continue to make new collections to broaden the variety of species and eco-region sources and to increase seed production. Increasing amounts of locally adapted native species are being used in restoration, wildfire rehabilitation, soil stabilization, fuels reduction, habitat enhancement, weed prevention, and engineering projects.

A native plant program was initiated in the National Fire Plan in 2001 with congressional direction to develop and use locally adapted native plant materials.

Oregon/Washington BLM released a policy on the Use of Native Species Plant Materials in 2001 which built upon the Plant Genetics Plan of 1999. These policies guide appropriate land management activities and encourage managers and specialists to develop and use native plant materials on public lands.

Currently, the districts' production levels of native plant materials range from small a few hundred pounds per year to over 30,000 pounds in southwest Oregon. More than

BLM and private grower at a Blue wildrye seed increase field.

Blue wildrye stabilizes soil at a riparian restoration site.

70 seed-lots (sources) representing over 15 native grasses and forbs produced seed in 2004.

Approximately 70% of the budget for native plant materials production is out-sourced to the private sector through supply contracts with farmers or other service contracts.

Cooperative partnerships between federal, state agencies and private landowners have been fostered to capitalize on sharing technology, skills, and resources. These efforts minimize the costs of producing native plant materials, develop joint research studies such as seed and plant material transfer zones and genotype adaptability studies, and establish field trials.

Trends and Forecast

Special Status Species

The number of taxa added to the Special Status Species Program has increased over the last ten years and it is likely to increase in the future due to identification of new tax and new taxa discoveries on the districts and ongoing field surveys. Threats such as the loss of habitat in the urban interface, increased weeds and non-native plants, increased off-highway vehicle recreation increase risk to populations.

The limited biological and ecological understanding of the lichens, bryophytes and fungi which have recently been added to the Special Status Species Program creates challenges in predicting potential habitat and developing management strategies for these species.

Invasive Plants

In general the districts have increased the number of species inventoried, tracked and managed in response to more invasive plants occurring on public lands in western Oregon.

The number of invasive species actively managed has more than doubled since 1996 on most western Oregon BLM districts. The number of species treated in Coos Bay district and Klamath Falls field office has not changed since 1996 (See Table 4).

Increased cooperation and partnerships between federal, state and private landowners has greatly improved the capacity and effectiveness of invasive species management and is especially important given the checkerboard land ownership pattern of private and public lands.

Increased public awareness about the spread and impacts of invasive species has fostered strategies that pooled funding resources and increased participation in weed treatment activities which has resulted in more acres treated.

Portuguese Broom.

Table 4 – Invasive Plant Trends and Total Treatments from 1996 through 2003

Field Unit	Number of Invasive Species Treated in 1996	Number of Invasive Species Treated since 1996	Acres Treated
Salem	5	14	3,093
Eugene	2	4	3,054
Roseburg	4	23	4,001
Medford	3	23	12,140
Coos Bay	3	3	2,853
Klamath Falls	13	13	1,710

Native Plant Materials

Public and agency support for native plant program has increased steadily. Native plant material production including native grasses and forbs has increased dramatically on all districts.

Locally adapted native plant material use has replaced significant amounts of non-native species use on BLM projects.

Management Opportunities

Special Status Species

Increase the level of collaboration and activities with other public and private entities to meet recovery plan goals and de-list federally listed species or to avoid listing additional species. Collaboration will likely be the only way to meet recovery goals for some species where ownership patterns are mixed.

Conservation plans targeted at multiple special status species will consolidate and streamline planning efforts.

Special habitats (serpentine, dunes, mounded prairies, rock outcrop, seasonal streams, and meadows) or "hotspots" where many special status plants occur can be identified and incorporated into conservation planning efforts.

The plan revision will provide an opportunity to clarify or refine management direction to improve RMP implementation. Table 5 describes these opportunities.

Table 5 – Proposed Refinement of Current Management Direction for Botany

Planning decision	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Refine potential habitat of special status species.	Yes	Short-term analysis and planning will save time and effort in long-term.	Better refine suitable habitat through analysis and conservation assessments.
Develop integrated resource monitoring plans for species and their habitats that evaluate trends.	Yes	Necessary to determine population and habitat condition, trends and impacts of actions. Basic plant community data is needed for all disciplines.	Refine monitoring strategy for efficiency. Integrate with fire, weed, wildlife, other resources.
Management of special status species (plant and fungi) in all land use allocations.	Yes	Resource management plans do not provide detailed direction regarding early seral/meadow/oak woodland habitat and species.	Ensure flexibility for the conservation of rare species and habitats in all land use allocations.

Kellog's Monkey Flower.

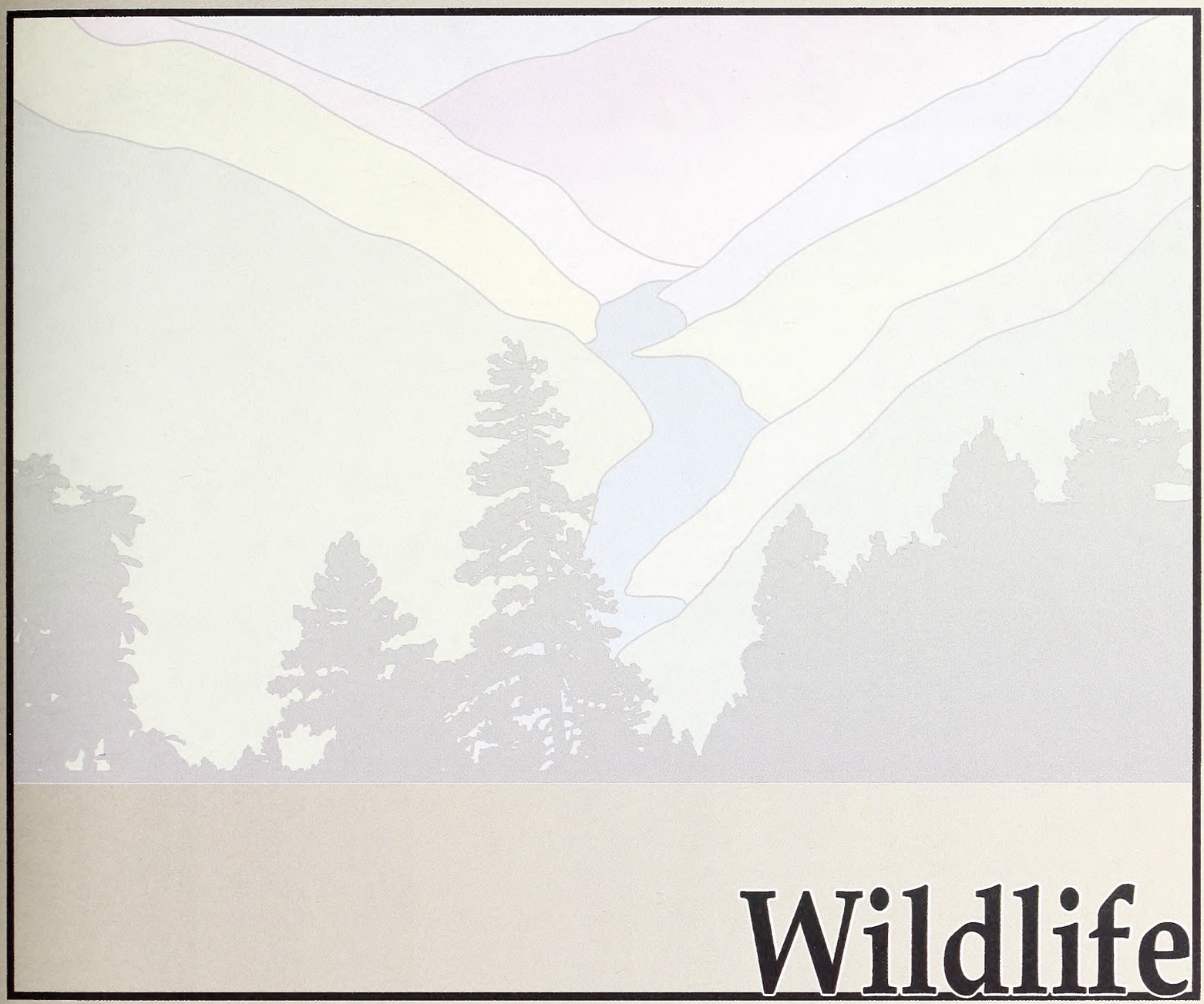
Invasive Plants

Update invasive weed program goals in the resource management plans to be consistent with BLM national invasive weed strategy.

Incorporate the invasive weed objectives and goals of the Noxious Weed Strategy for Oregon/Washington (August 1994, the Invasive Species Executive Order No. 13112 of 1999, and the Vegetation Treatment Using Herbicides Programmatic Environmental Impact Statement into RMPs.

Native Plant Materials

Update native plant program goals and objectives from the Policy on the Use of Native Species Plant Materials for Oregon/ Washington BLM.



Wildlife

Key Points

- Northern spotted owl habitat in the planning area has increased since 1995 while marbled murrelet habitat has remained relatively unchanged.
- Northern spotted owl populations in the Medford, Coos Bay, Roseburg districts and Klamath Falls field office were stable since 1985 while populations have declined in the Eugene and Salem districts.
- Marbled murrelet populations in Oregon declined approximately 50% during the years 1992-1996 and experienced no change during the years 1997-2003.

Wildlife

Current Conditions and Context

BLM manages approximately 2,550,000 acres or 26 percent of the federal land in the four physiographic provinces within the planning area; Oregon Coast Range, Oregon Western Cascades, Oregon Eastern Cascades and Klamath.

Habitats range from coastal beaches to montane forests and Great Basin sagebrush. The BLM's role in the management of wildlife is cooperative with the State of Oregon and directed toward the maintenance, improvement, and expansion of the quantity and quality of habitat in a multiple resource management framework.

There are several thousand vertebrate and invertebrate species that occur in western and montane forest types of Washington and Oregon. Over 300 vertebrate species have been identified that occurred in western and montane forest types of Washington and Oregon. There are an estimated 350 species of mollusks and 20,000-25,000 species of arthropods within the Northwest Forest Plan area (Figure 44).

There are 221 species of special interest within the western Oregon BLM planning area, including 116 species that are protected under federal or state endangered species status or receive management consideration under the Bureau's special status species program (Figure 45). Another 12 species or species groups are of special interest to the Bureau or general public due to management directions, charisma, or as indicators of ecosystem health.

These species and groups include:

-northern spotted owl (Strix occidentalis caurina)
-marbled murrelet (Brachyramphus marmoratus marmoratus)
-bald eagle (Haliaeetus leucocephalus)
-western snowy plover (Charadrius alexandrinus nivosus)
-vernal pool fairy shrimp (Branchinecta lynchi)
-Oregon silverspot butterfly (Speyeria zerene hippolyta)
-Fender's blue butterfly (Icaricia icarioides fenderi)
-Mardon's skipper (Polites mardon)
-Oregon spotted frog (Rana pretiosa)
-greater sage grouse (Centrocercus urophasianus)
-Pacific fisher (Martes pennanti pacifica)
-Columbia white-tailed deer (Odocoileus virginianus leucurus)
-peregrine falcon (Falco peregrinus)
-game species (deer, elk, antelope, bear, cougar)
-late successional associates
-cavity dwellers
-bats
-neotropical migrants
-raptors
-herptofauna
-riparian associates
-stream/pond associates
-snags and downwood associates

Figure 44 – Relative Abundance of Species within the Planning Area

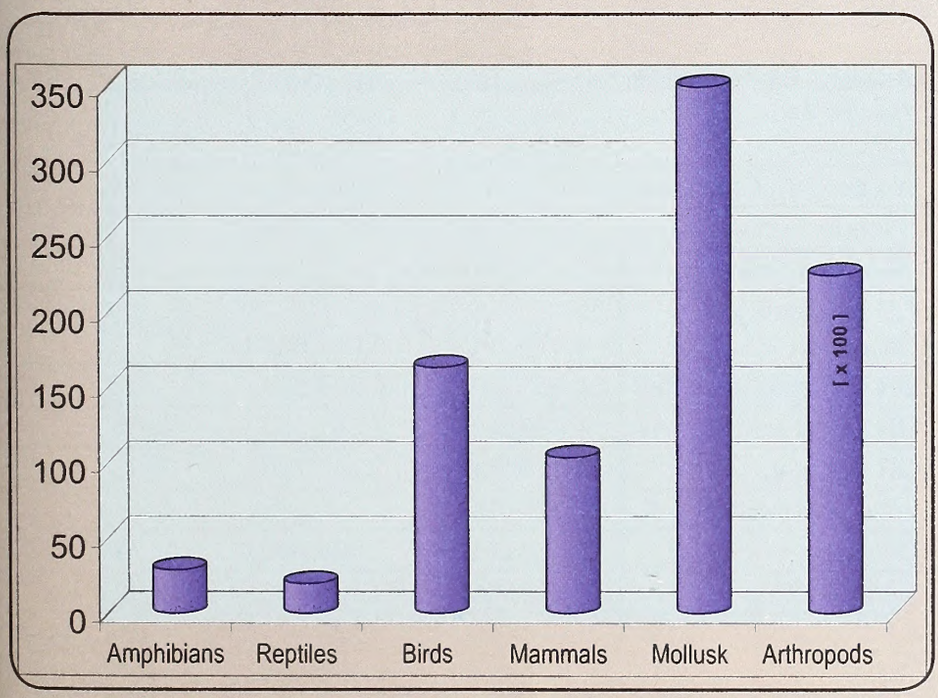
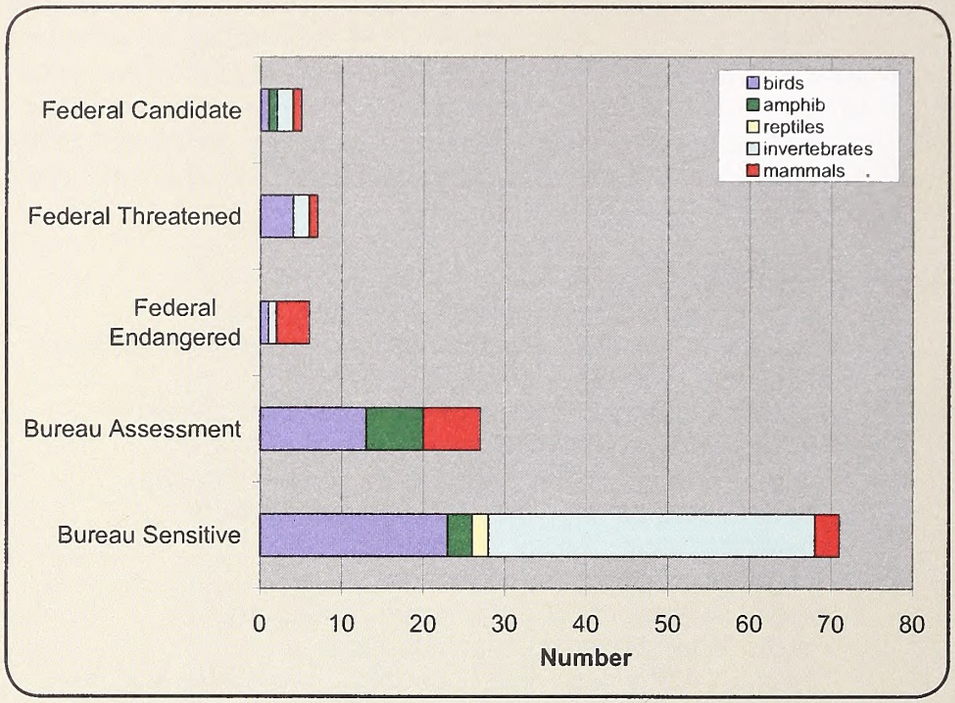


Figure 45 shows, by category, the number of species that are protected under federal or state endangered species status or receive management consideration under the Bureau's special status species program.

A subset of individual species will be specifically addressed in the analysis of the management situation because of their importance in developing management alternatives, consultation with the U.S. Fish and Wildlife Service, or high public interest.

Figure 45 – Special Status Species by Category



Northern Spotted Owl

Under the current RMPs, habitat for the northern spotted owl has increased.

Since 1985, northern spotted owl populations in the Medford, Coos Bay, Roseburg districts and Klamath Falls field office were stable while populations have declined in the Eugene and Salem districts. Map 5 shows known spotted owl sites on BLM land.

Since 1985, northern spotted owl populations on federal lands have declined 37 percent overall and have declined 18 percent in Oregon.

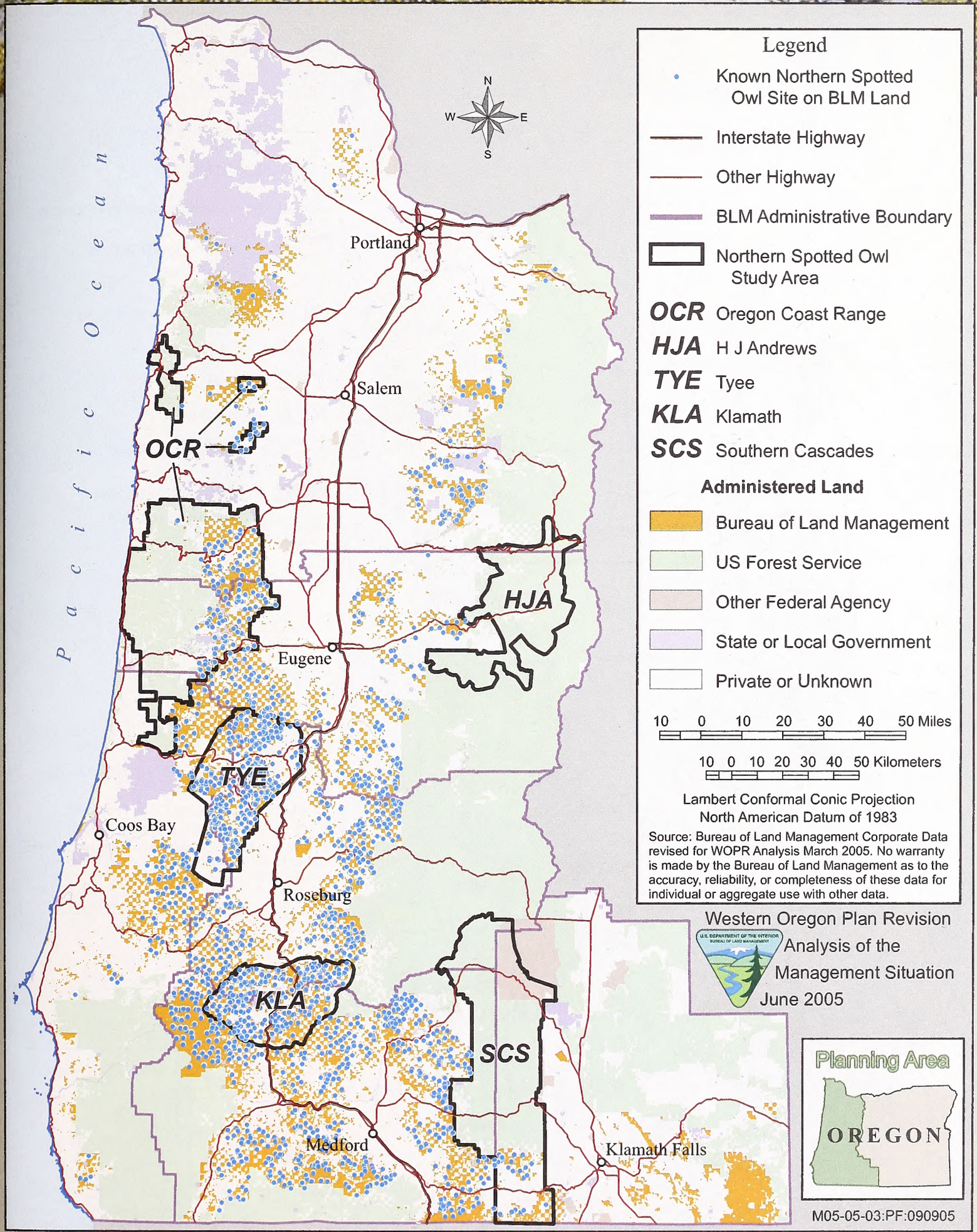
The U.S. Fish and Wildlife status review which was released November 15, 2004 determined:

- The rate of habitat loss has declined, and although spotted owl populations continue to decline, that response was expected.
- The uncertainty surrounding the effects on spotted owl populations from barred owls and the new potential threats from disease, fire, and sudden oak death suggests a net increase in risk since 1990.
- The increase in risk was not considered sufficient to require reclassification to endangered status.

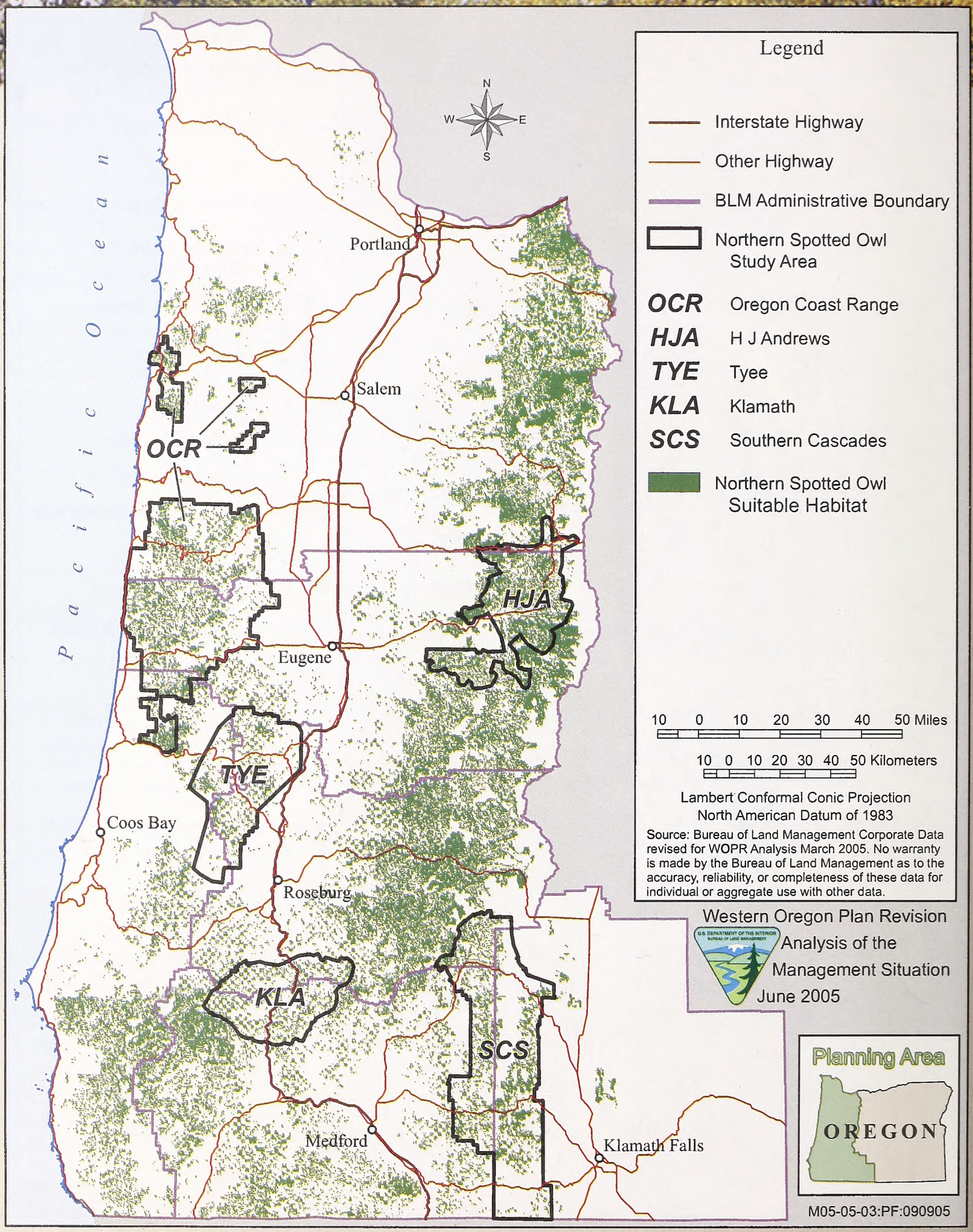
Table 6 and Map 6 shows the amount and location of suitable northern spotted owl habitat by physiographic province. In addition, figures 46 and 47 show relationship of suitable habitat to watersheds and BLM lands

Table 6 – A Summary of the Available Suitable Spotted Owl Habitat within the Range of the Northern Spotted Owl

Physiographic Province	Federal Area (ac)	Federal Habitat Capable in 1993 (ac)	Federal Habitat in 1993 (% of Capable)
WA Western Cascades	3,721,000	1,360,800	52
WA Eastern Cascades	3,502,400	2,363,300	44
Olympic Peninsula	1,522,300	1,067,000	61
Western Lowlands	2300	n/a	
OR Western Cascades	4,476,700	4,084,500	61
OR Eastern Cascades	1,551,800	4,052,800	62
OR Coast Range	1,413,300	1,391,100	58
OR Klamath	2,118,200	1,818,700	55
Willamette Valley	21,000	n/a	
CA Coast Range	503,600	346,700	50
CA Klamath	4,520,200	3,703,500	62
CA Cascades	1,091,300	876,200	41
Total	**24,444,100**	**18,064,600**	57

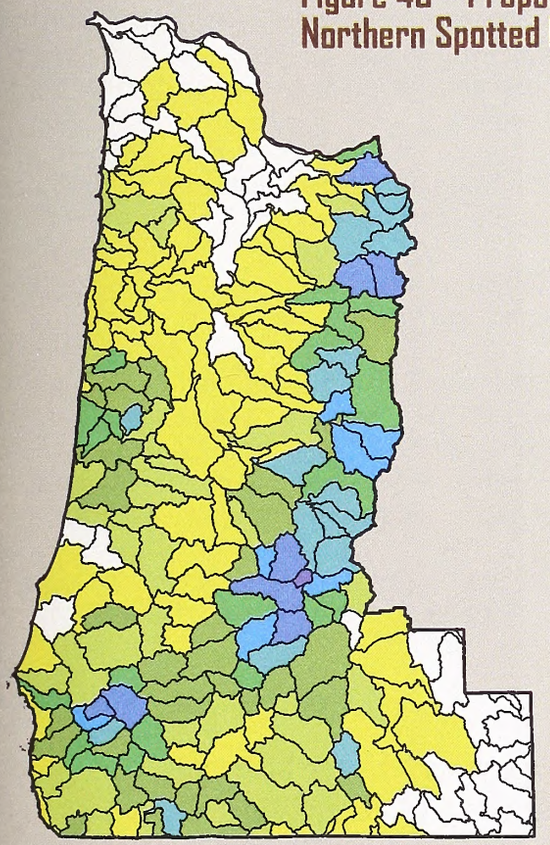


Map 5: Known Northern Spotted Owl (NSO) Sites on BLM Lands and NSO Study Sites in Western Oregon



Map 6: Suitable Northern Spotted Owl (NSO) Habitat and NSO Study Sites in Western Oregon

Figure 46 – Proportion of Watersheds Identified as Northern Spotted Owl Suitable Habitat



Percent Northern Spotted Owl Suitable Habitat

- Zero
- 0.1 to 10
- 10.1 to 20
- 20.1 to 30
- 30.1 to 40
- 40.1 to 50
- 50.1 to 60
- 60.1 to 70
- 70.1 to 80

Marbled Murrelet

Thirty-six percent of federal lands (2,381,000 acres) within Washington, Oregon, and California are suitable habitat for marbled murrelet, of which 900,700 acres are in Oregon.

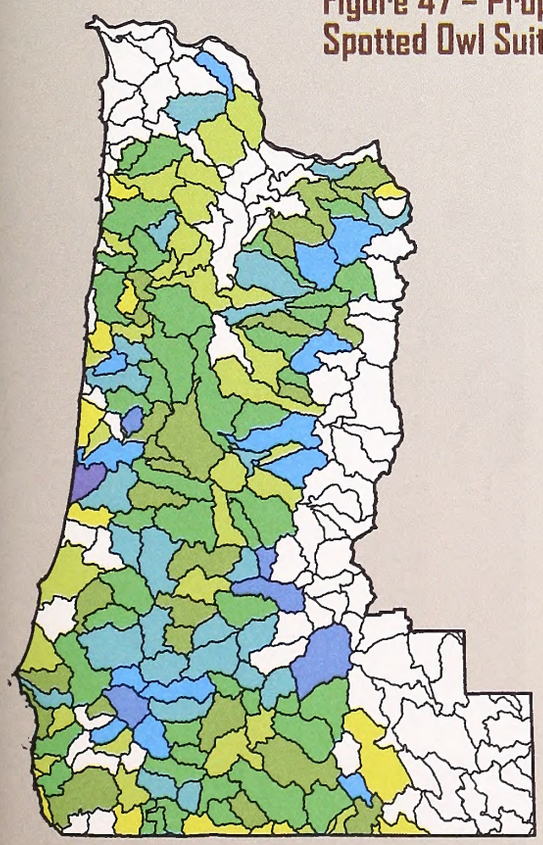
There is a North American population of 947,500 murrelets; 21,900 or 2.3 percent occur within the listed range; 7,500 or less than 0.8 percent occur in Oregon.

The marbled murrelet feeds at sea and nests up to 50 miles inland, however, almost all nesting occurs within 35 miles of the ocean.

Offshore population estimates are proportional to potential nesting habitat.

The primary causes for listing under the Endangered Species Act in 1992 were the loss and modification of nesting habitat due to commercial timber harvest, mortality associated with gill-net fishing, and effects of oil spills.

Figure 47 – Proportion of BLM Lands Identified as Northern Spotted Owl Suitable Habitat by Watershed

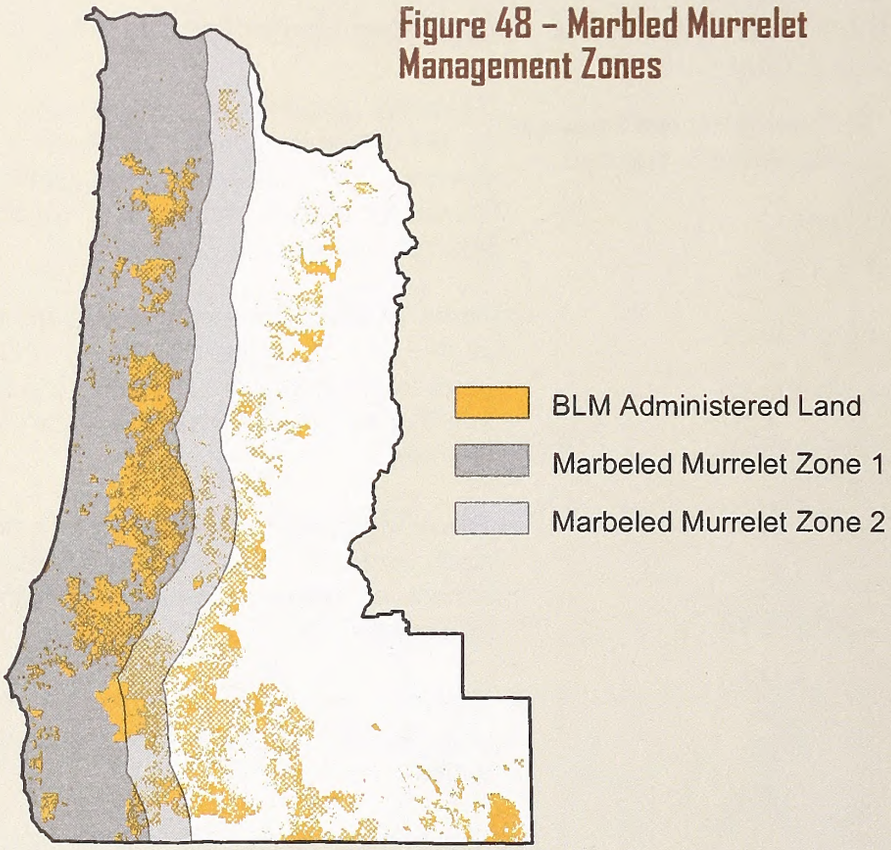


Percent BLM Land designated Northern Spotted Owl Suitable Habitat

- Zero
- 0.1 to 10
- 10.1 to 20
- 20.1 to 30
- 30.1 to 40
- 40.1 to 50
- 50.1 to 60
- 60.1 to 70
- 70.1 to 80

Marbled Murrelet.

Figure 48 – Marbled Murrelet Management Zones



The marbled murrelet recovery plan and critical habitat designations both focus on the area within 0-35 miles of the cosast.

The U.S. Fish and Wildlife Service conducted a 5-year status review in 2004 which determined that no change in status was warranted.

The 5-year status review concluded that "[i]t is unclear whether the current management commitments are adequate to protect the murrelet in the six conservation zones for the next 50 years" (USDI 2004)

Pacific Fisher.

Pacific Fisher

Pacific fisher distribution has been reduced from coniferous forest within Washington, Oregon, and California to three isolated population centers; as shown in Figure 49, the southern Sierra Nevada, Klamath-Siskiyou, and southern Cascade provinces.

The southern Cascades population was reintroduced in 1961-1981.

The Pacific fisher occurs in the low and mid-elevation forested habitats with high canopy closure, large diameter trees and snags, multiple canopies, and down woody debris.

The U.S. Fish and Wildlife Service found that listing the species in its west coast range was warranted but precluded by pending proposals for other species with higher listing priorities.

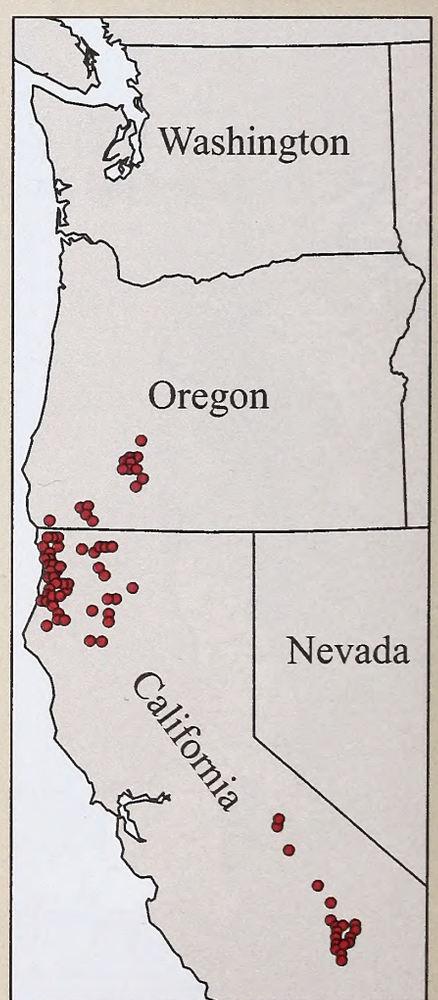
The State of Oregon lists the Pacific fisher as a state critical species.

Habitat loss and fragmentation appear to be significant threats to the fisher.

Fisher habitat has been lost at an annual rate of 0.41 and 1.83 percent per year in the Cascade Province and Oregon-Klamath Province, respectively. The primary causes of habitat loss were timber harvest and fire.

Habitat loss was less than the rates anticipated to occur from 1991-2001.

Figure 49 – Fisher Distribution in Washington, Oregon, and California



There is no RMP management direction specific to the Pacific fisher in Oregon. Management direction is derived from the Special Status Species program, BLM Manual 6840. BLM is participating in the development of a Conservation Assessment and Strategy.

Fisher are not linked to one habitat type or plant association so much as they are linked to prey availability and habitat conditions. Older forests typically contain the large diameter trees necessary to provide natal cavities and large diameter logs necessary to provide resting sites. Key prey items may be linked to early seral forest types.

The Fisher appears to avoid areas of recreational use, roads and development.

Columbian White-tailed Deer

The Columbian white-tailed deer is the western most species of white-tailed deer in North and Central America.

The Columbian white-tailed deer exists in two distinct population segments: the Douglas county population and the Columbia River population. Both population segments were listed as endangered in 1967, under the Endangered Species Preservation Act. The Douglas County population is contained within the boundaries of the Roseburg district. The range of the Columbia river population includes portions of the Salem district. Both populations are associated with low elevation hardwoods, grasslands, and riparian areas.

Under the current resource management plans, the vegetation management on approximately 12,700 acres of land, in the Roseburg district was restricted to those activities determined to be beneficial to the Columbian white-tailed deer; management was not affected in the Salem district.

The Douglas county population was removed from listing under the Endangered Species Act in July 2003. Recovery was the result of the acquisition of secure habitat (North Bank Habitat Management Area), population recovery, and land management and local ordinances designed to benefit the Columbian white-tailed deer.

North Bank Habitat Management Area was acquired by the BLM in 1994 to benefit the Columbian white-tailed deer. The habitat management plan for this area was completed in 2001. It provided 6544 acres of secure habitat for the Columbian white-tailed deer.

Management for Columbian white-tailed deer on the additional 6,000 acres set aside by the 1995 Roseburg RMP will likely no longer be necessary.

The Salem district does not currently support any Columbian white-tailed deer.

Migratory Land birds

In 2001, President Clinton signed Executive Order 13186 directing federal agencies to develop and implement a memorandum of understanding with the Fish and Wildlife Service that would promote the conservation of migratory birds.

Significant issues in land bird management include declining populations, habitat loss and conversion, forest management, and forest fragmentation.

Partners-in-Flight has identified 30 species of land birds in coniferous forests of western Oregon and Washington that have exhibited significant recent (1980-1996) or long-term (1966-1996) declining trends in population indices and identified 14 species with increasing trends.

The Fish and Wildlife Service has listed 27 species of birds as Birds of Conservation Concern (2002). These species represent the Fish and Wildlife Service's highest conservation concerns other than threatened and endangered species. There are 42 special status bird species in Westside Oregon and Washington.

Cavity Nesters

Cavity nesters are a specific subset of land birds that rely on dead, dying trees or defective trees. Species that excavate their own cavities are referred to as primary cavity nesters and those that use cavities excavated by other are secondary canopy nesters.

Within Oregon and Washington there are 8 species of bird identified as primary cavity nesters. There are 33 species which are identified as secondary nesters. In addition, 23 species of mammals are known to use cavities.

Species of concern inhabit all habitat types and seral stages.

Deer and Elk

Roosevelt elk and black-tailed deer numbers and their management are of concern to the Oregon Department of Fish and Wildlife, as well as a large segment of the public.

Elk numbers in western Oregon have stabilized since 1994. Eighty-five percent of Oregon Department of Wildlife Management Units are less than 5 percent below their management objectives.

Oregon Department of Fish and Wildlife has observed some shift in elk numbers from public land to private land. One of the causes of this movement appears to be forage quality.

Black-tailed deer numbers in western Oregon appear to be on the decline. Possible factors leading to this decline may be increased disease, increased predation, decreased forage, and/or decreased visibility which may bias population indices. Oregon Department of Fish and Wildlife has cut back on hunting pressure and harvest targets.

Trends and Forecast

Northern Spotted Owl

Range-wide there has been a decadal 5.4 percent loss of suitable northern spotted owl habitat due to wildfire and management, In-growth caused a decadal increase of suitable northern spotted owl habitat of 8 percent in forest lands over 80 years of age.

Overall spotted owl populations on federal lands have declined approximately 37 percent since 1985. The eight demographic study areas monitoring the Northwest Forest Plan had an average annual northern spotted owl population decline of 2.4 percent. Table 7 shows the population trend for each study area. The location of the study areas are shown on Maps 5 and 6.

A Conservation Strategy for the Northern Spotted Owl, (Thomas, et al. 1990) and the draft northern spotted owl recovery plan (USDI 1992) projected the continued decline

Table 7 – Population trends across the range of the northern spotted owl, 1985-2003 (Anthony, et al. 2004)

State	Study Area	Ownership*	Realized Population Change**
WA	Wenatchee	Pri/Fed	Declining
WA	Cle Elum	Fed	Declining
WA	Rainier	Fed/Pri	Declining
WA	Olympic	Fed	Declining
OR	Coast Range	Fed (BLM/FS)	Declining
OR	H J Andrews	Fed (FS)	Declining
OR	Warm Springs	Tribal	Declining
OR	Tyee	Fed (BLM)/Pri	Stationary
OR	Klamath	Fed (BLM)/Pri	Stationary
OR	S Cascades	Fed (FS)	Stationary
CA	NW Calif.	Fed (FS)	Declining? ***
CA	Hoopa	Tribal	Stationary
CA	Simpson	Pri	Declining
CA	Marin	Fed	n/a ****

*Fed – Federal ownership including U.S. Forest Service, Bureau of Land Management, and National Park Service. Pri – Private landowner.
**Trend based on estimates of realized population change ($\Delta\hat{i}$).
***Gradual declines in fecundity and apparent survival, plus estimates of realized population change suggest a decline in last 8 years.
****Sample too small to estimate λ.

of spotted owl populations for up to 50 years. This decline, in a worst case scenario, was projected to be 50-60 percent.

Analysis of the status and trends of demographics of the northern spotted owl indicates that while the Northwest Forest Plan appears to be having a positive effect on demography of the northern spotted owl, new threats including barred owls, west Nile virus, and sudden oak death are continuing to have impacts (Anthony et al. 2004).

The results of effectiveness monitoring during the first ten years of the Northwest Forest Plan do not provide any reason to depart from the objective of habitat maintenance and restoration as described under the plan (Lint, in press). However, this monitoring did not examine if there were alternative management strategies that might achieve management objectives.

Under current management direction, in-growth of habitat will continue to outpace loss due to management activities.

Key features

Suitable spotted owl habitat includes large diameter trees and snags, large cavities or other platforms, mistletoe, high canopy closure, multiple canopies, and down woody debris.

The dominant prey species in the northern Coast Range mountains and Cascade mountains is the northern flying squirrel. In the Klamath province, woodrats make up a proportion of the diet equal to that of flying squirrels.

Woodrats are an early seral species/ hardwood species. In the Klamath province, the percentage of early seral habitat on the landscape plays a role in spotted owl management due to its relationship to prey.

Special Designations

Approximately 6,887,000 acres of federal lands, including 3,257,000 acres in Oregon and 1,046,000 of BLM lands have been designated as northern spotted owl critical habitat.

Marbled Murrelet

Habitat loss has declined since the implementation of the Northwest Forest Plan. There has been a loss of 1.1 percent of the available murrelet habitat since adoption of the Northwest Forest Plan; 0.3 percent due to management activities. This is a substantial reduction from the 2.5 percent loss of older forests that was anticipated in the Northwest Forest Plan.

Monitoring indicates an in-growth of approximately 357,000 acres of habitat per decade.

Demographic studies project an initial population declines in each of six recovery zones of between 3.0 and 6.2 percent per year (Table 8).

Management and natural losses of habitat since 1994 have accounted for 2.3 percent of habitat or 54,800 acres.

Estimates of habitat loss on BLM forests in Oregon were 0.9 percent. Almost all of this loss resulted from management activities.

Based upon demographic assumptions, extinction probabilities for the marbled murrelet are over 80 percent by 2100 for each recovery zone.

Key habitat features.

Key features of murrelet habitat are large diameter trees; large diameter moss covered limbs, canopy sufficient to provide high vertical and horizontal cover, and openings in the canopy sufficient to provide flight paths to the nest tree.

Special Designations

Approximately 3,887,800 acres of critical habitat were designated in Washington, Oregon, and California; 1,338,200 acres of federal lands in Oregon. Critical habitat was designated within 35 miles of the coast.

Table 8 – Populations trends across the range of the marbled murrelet

State	Years	Apparent Trend	Source
Washington	1996-1999	No change	Thompson 1997-1999
	1972-1993	Possible decline	Speich and Wahl 1995
Oregon	1992-1996	>50% decline	Strong 2003a
	1997-2003	No change	Strong 2003a,b
California	1995-2001	Prob. Decline	Suddjian 2001
Data from McShane et al 2004			

Management Opportunities

Northern Spotted Owl

Thinning to low density can be used to accelerate development of suitable habitat characteristics.

An alternative to fixed reserves could be long term maintenance of critical core areas combined with a revolving, long-rotation across the landscape.

Northern spotted owl management will need to differ between physiographic provinces because of ecological differences.

In the southern portion of the range some proportion of early seral and hardwood habitat in the landscape may be important to spotted owl management.

Table 9 shows potential refinement of current management direction.

Marbled Murrelet

Thinning to low densities can be use to accelerate development of suitable habitat characteristics.

Identify landscapes upon which to manage for marbled murrelets based on offshore population estimates.

Use long rotation management to provide for long-term retention of nesting structure across the landscape. Permit multiple entries through the life of the stand, as necessary to develop and maintain suitable habitat features. (Refer to Table 10.)

Pacific Fisher
Intermediate treatments that strive to provide for the development and recruitment of large diameter trees, snags, down wood and green tree retention are likely beneficial but it is unknown if they meet fisher specific needs.

Second growth forest can be suitable to fisher if structural complexity; large diameter trees and snags; large hardwoods, and down wood are permitted to develop and persist.

Large blocks of low to mid-elevation reserved forests would provide anchors in which secure late-successional and old-growth habitat would develop.

Long rotations and snag and down wood management across all age classes could maintain sufficient breeding and foraging habitat to maintain fisher across the landscape.

Connectivity between the isolated South Cascade population and the isolated Klamath-Siskiyou population could include a combination of a level of suitable habitat throughout the landscape, reserves, and reintroductions.

Cavity Nesters

Address at the landscape level, the RMP management direction for the matrix which provides for retention of sufficient snags within a timber harvest unit be retained to provide for cavity nesters at 40 % of their potential population levels.

Deer and Elk

Management opportunities for both deer and elk on BLM lands include managing disturbance, increasing forage quantity/ quality, and managing cover.

Table 9 –Potential Refinement of Current Management Direction for the Northern Spotted Owl

Planning decision	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Human activities that could disturb owl nesting will be prohibited within 0.25 miles of all active spotted owl nest sites	no	The USFWS has reviewed disturbance effects and has reduce the 0.25 mile distance to as little as 60 yards depending upon the activity and equipment being used	1. Change seasonal restriction to coincide with current USFWS science.

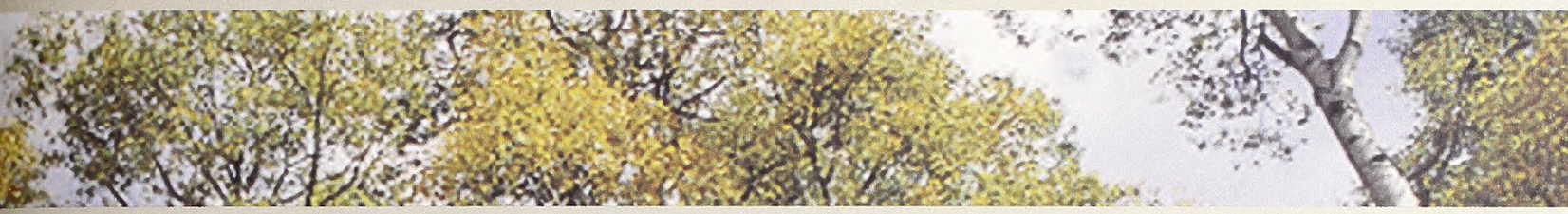


Table 10 – Potential Refinement of Current Management Direction for the Marbled Murrelet

Planning decision	Is decision responsive to current issues?	Remarks (rationale)	Options for change
References to incorporating recovery plan recommendation upon its completion	no	RMPs make references to incorporate components of the recovery plan once the recovery plan is complete	1. Develop recovery zone management plans. 2. Integrate recovery zone management plans into the RMP revision
Pre-project surveys	yes	1. There have been studies in the Medford district that have identified the majority of that district to be outside of the known occupied range of the murrelet. Pre-project surveys are no longer necessary. 2. Within the Coast Range the Salem, Eugene, Coos Bay, and Roseburg district have begun to implement new Level 2 team guidance further defining when remnant habitat will and will not require pre-project surveys.	1. Refine pre-project survey requirement to reflect changes to the range of the murrelet in the Medford district. 2. Integrate the Level 2 guidance into the RMP revision.
Protection of occupied stands and adjacent habitat	yes	Minimizes loss of known individuals	Update RMP to reflect move away from 35-50 mile zone consistent with recovery plan and conservation strategies.

Fisheries

Key Points

- BLM's ability to influence aquatic habitat and fish populations varies with ownership patterns, percent ownership, and location near stream channels.
- Although the BLM does not manage the majority of habitat along streams with listed fish, the BLM can target limiting habitat factors for fish populations.
- Since 1994, the majority of restoration money has been spent on fish passage and roads. Some habitat improvement projects have been completed, however, many more opportunities exist.
- Key Watersheds don't always coincide with areas that are important for fish.
- The BLM has limited opportunity to reduce road density. Addressing road location, condition, and chronic problem areas rather than reducing miles would better focus restoration efforts.
- Implementation of the current plan has largely focused on developing conifers in Riparian Reserves. Most riparian stands were forested in the past with a mix of conifers and hardwoods. Both are important to diversity of aquatic habitat.

Fisheries

Current Conditions and Context

Within the Northwest Forest Plan area, there are eight. Evolutionarily significant units for anadromous fish populations that are listed and/or proposed as threatened or endangered under the Endangered Species Act. Figure 50 shows the evolutionary significant unit boundaries within the western Oregon planning area.

There are four resident fish populations that are listed as threatened or endangered under the Endangered Species Act. The bull trout is a resident species that occurs within the McKenzie River basin and east of the Cascade mountain range. The Oregon Chub occurs on private land within the planning area. The Lostriver and Shortnose suckers are two resident species unique to the Klamath Basin.

Recovery plans have been established for the Bull Trout (draft), Lostriver Sucker, and the Shortnose sucker populations. Recovery plans for the eight anadromous fish populations are in progress and are expected to be available for use in the plan revision.

Management opportunities, such as riparian thinning and culvert replacements, that can improve aquatic and riparian habitat for listed and proposed fish species have been limited to due an increase in litigation over the last ten years. Riparian Reserves have been often viewed and treated as "preserves" which has limited the ability of land managers to implement treatments which would improve habitat. Additionally, an increase in detailed information requirements as a result of litigation has resulted in a decreased capacity to meet other program workloads.

BLM Ownership Pattern and Fisheries Resources

As the percentage of ownership varies in watersheds, the ability of the Bureau of Land Management to influence aquatic and riparian habitat ecosystems also varies. The location and percentage of BLM land and the intermingled nature of land ownership patterns on O&C lands also affect the BLM's ability to influence these resources. Figure 51 shows examples of BLM ownership patterns and locations near fish streams.

Some streams have a higher potential than others to provide high quality habitat for salmonids. High intrinsic potential is a scientific approach used to assess the potential of a stream to provide high-quality rearing habitat for salmonids. Intrinsic potential is determined from channel gradient, valley constraint, and mean annual discharge. Presumed species-specific relationships between these attributes and value of rearing habitat were developed from available literature and field observations.

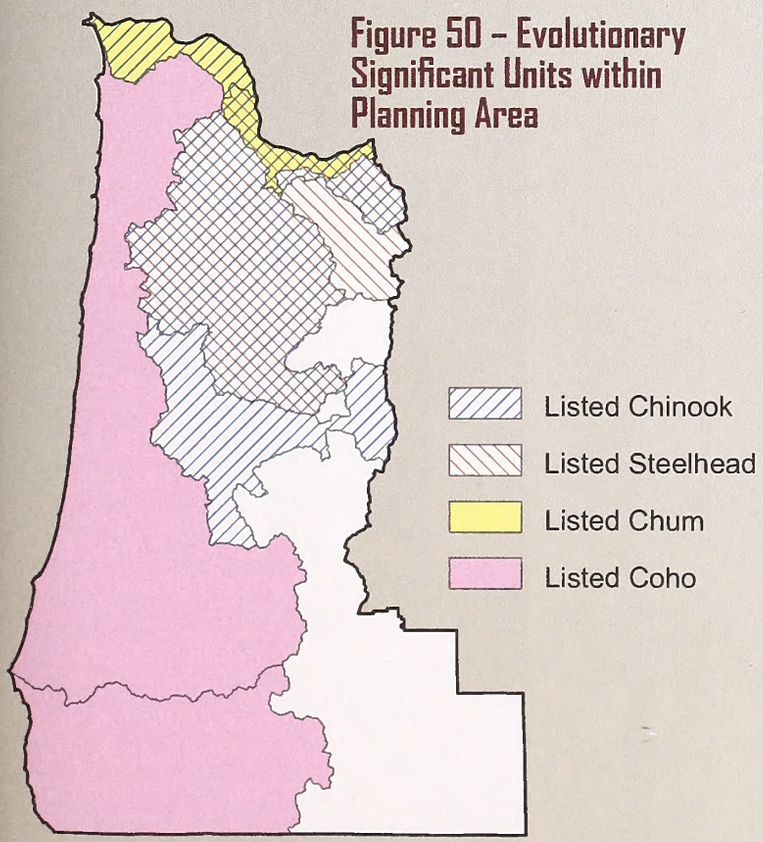


Figure 50 – Evolutionary Significant Units within Planning Area

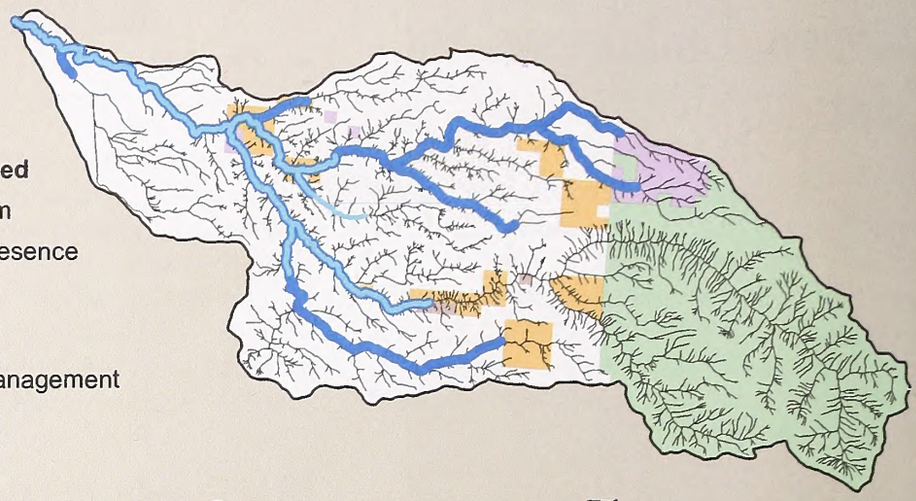
- The Aquatic Component of the Coastal Landscape Analysis and Modeling Study uses calculated intrinsic potentials to help managers prioritize areas throughout the Coastal Province of Oregon for restoration, protection, and low-risk, high-intensity forestry.

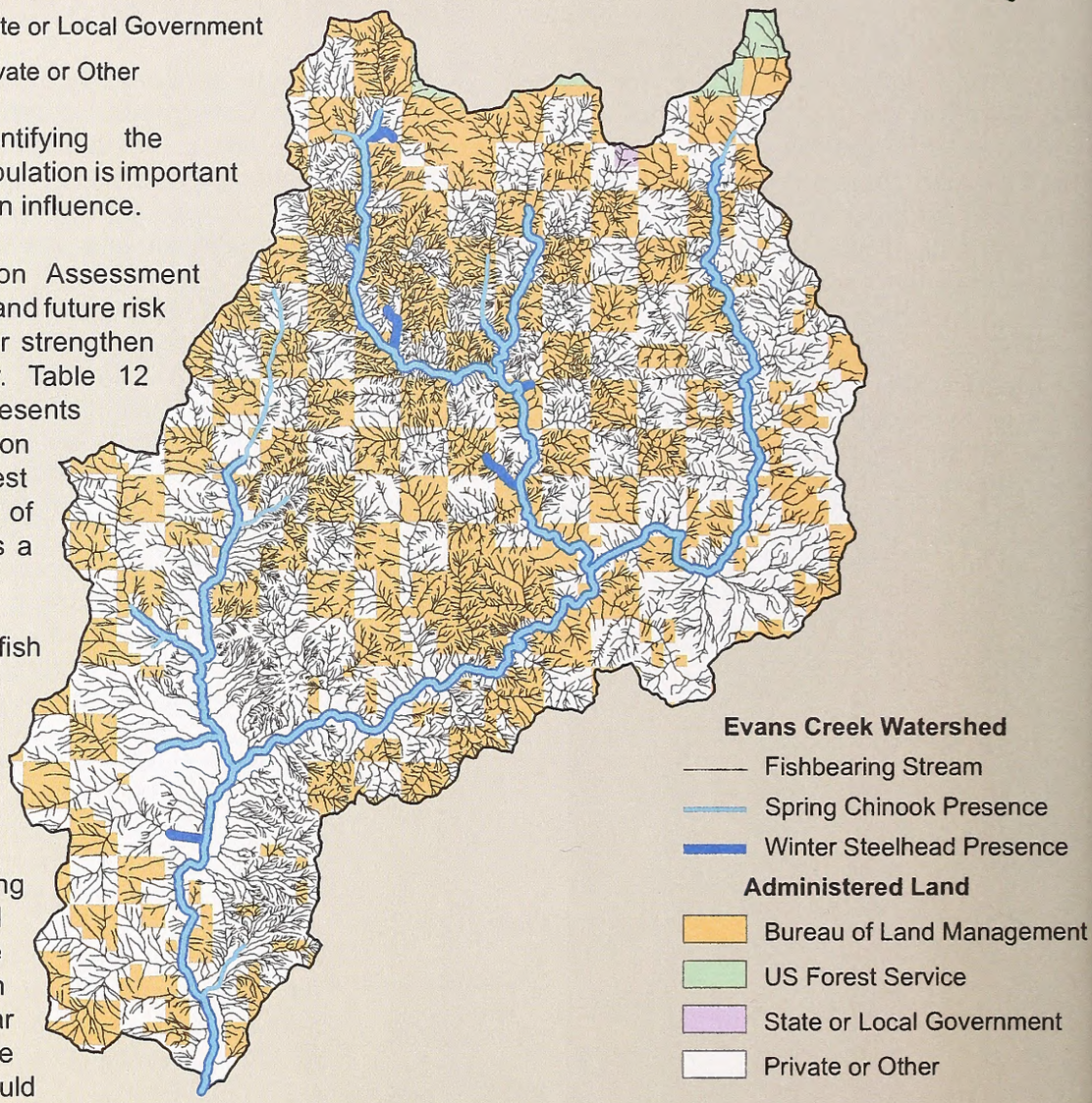
- Table 11 shows an example of BLM ownershipand miles of streams withlisted fish. Blm's ability to influence aquatic habitat and fish populations not only depends on the percent of ownership, but thelocation of ownership relevantto areas that influence high intrinsic potential streams. (See Figure 52)

High intrinsic potential analysis has only been completed for coho salmon and steelhead in the Oregon Coast physiographic province, but could be expanded to include other fish populations and provinces within the plan area.

There are 6,575 miles of coho-bearing streams in the Oregon Coast coho evolutionary significant unit of which 673 miles (10%) flow through BLM administered lands; and 309 (4%) stream miles on BLM are considered high intrinsic potential for coho salmon. Figure 52 shows BLM ownership (59%) relative to high intrinsic potential stream reaches in the Upper Smith River watershed.

Figure 51 – Two Watersheds with Various BLM Ownership Patterns and Locations to Fish Bearing Streams





BLM's Ability to Effect Fish Populations

Fish populations are cyclic by nature and trends can be driven by a variety of factors. Since the BLM manages habitat and not fish populations, identifying the primary risk factors for each fish population is important to determine which factors BLM can influence.

The Oregon Coast Coho Salmon Assessment identifies declining factors, current and future risk factors and opportunities to further strengthen current coho population viability. Table 12 shows that stream complexity presents a medium level of risk to population viability and generally remains the best opportunity to improve productivity of the evolutionary significant unit as a whole.

In general, survival traits of fish include:

- Straying of adults
- Multiple life histories
- High fecundity
- Mobility of juveniles

In many watersheds containing streams with listed fish, BLM manages a small portion of the landscape. However, depending on the location of aquatic habitat near streams, the BLM could contribute to habitat conditions that in turn could contribute to survival rates. For example:

- Increasing fish distribution through culvert replacements (mobility).
- Improving and maintaining good water quality (high fecundity, multiple life histories).
- Providing stream complexity for various life history stages (high fecundity, multiple life histories).

Table 11 – Percent BLM Ownership and Miles of Listed Fish Bearing Streams by Sample Watersheds

Fifth Field Watershed	% BLM Ownership	Anadromous and/or Listed Fish Streams (Miles)	
		BLM	Other
Sixes River	2.5	2.6	50.0
Lower South Umpqua River	3.8	1.3	91.0
Calapooia River	4.7	0.1	56.8
Lower Coast Fork Willamette River	6.0	1.2	27.3
Eagle Creek	6.0	4.1	31.2
Calapooya Creek	7.5	5.2	142.0
Little River	14.6	5.9	31.7
East Fork Illinois River	15.5	2.0	17.3
Spencer Creek	16.1	------	------
Rogue River – Grants Pass	23.3	0.0	20.0
Klamath River – John C. Boyle Reservoir	26.4	n/a	n/a
Upper Umpqua River	34.5	41.3	123.7
Evans Creek	41.4	16.0	53.0
Deer Creek	41.6	9.0	37.0
Lake Creek	43.3	18.7	60.2
Upper Siuslaw River	44.4	73.4	127.0
Upper Alsea River	52.9	16.4	40.5
Upper Smith River	59.4	90.4	81.0
Rogue River – Horseshoe Bend	95.5	30.0	17.0

Figure 52 – High Intrinsic Potential streams in the Upper Smith watershed.

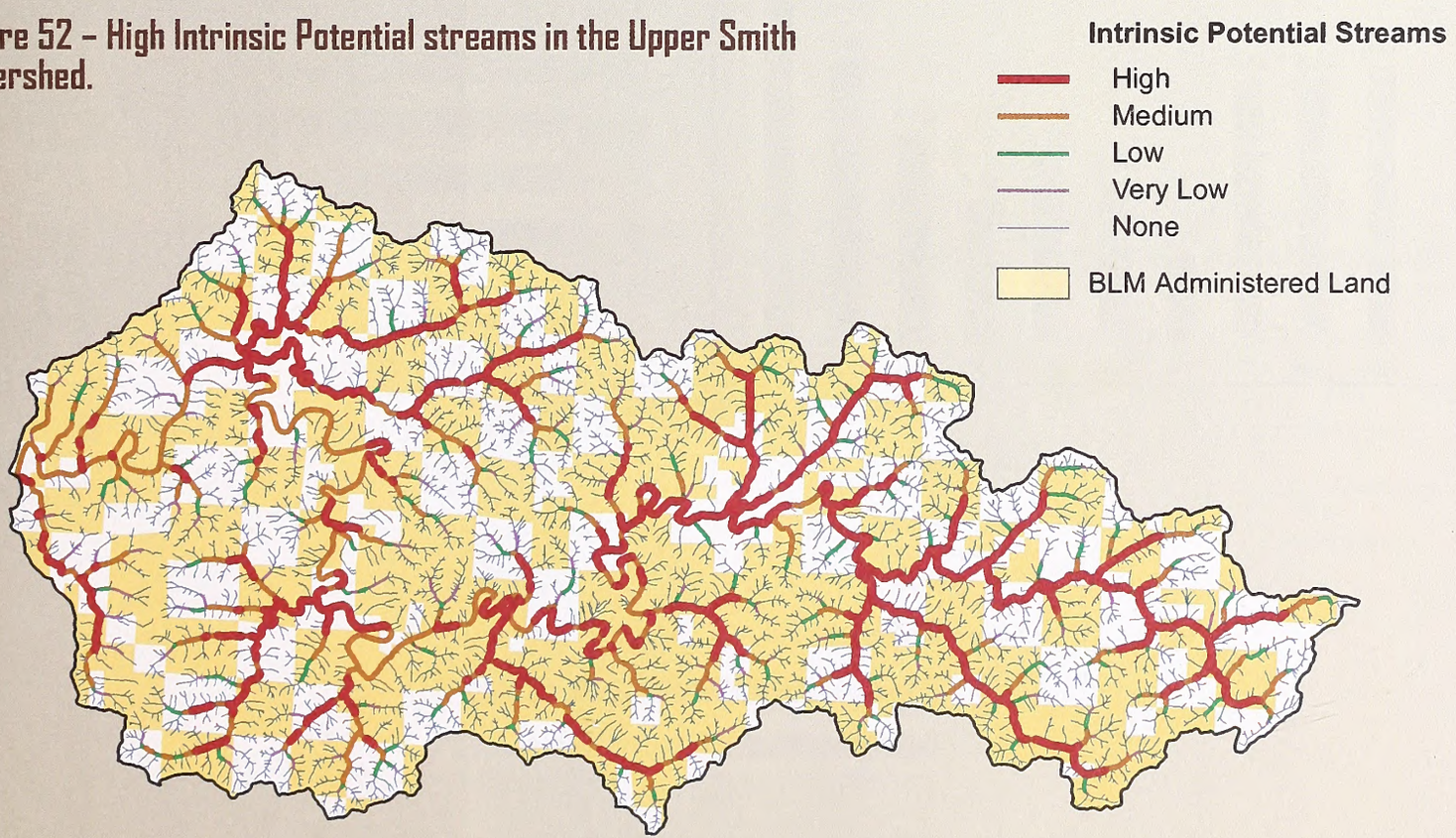


Table 12 – Risk factors and level for the Oregon Coast Coho Evolutionary Significant Unit

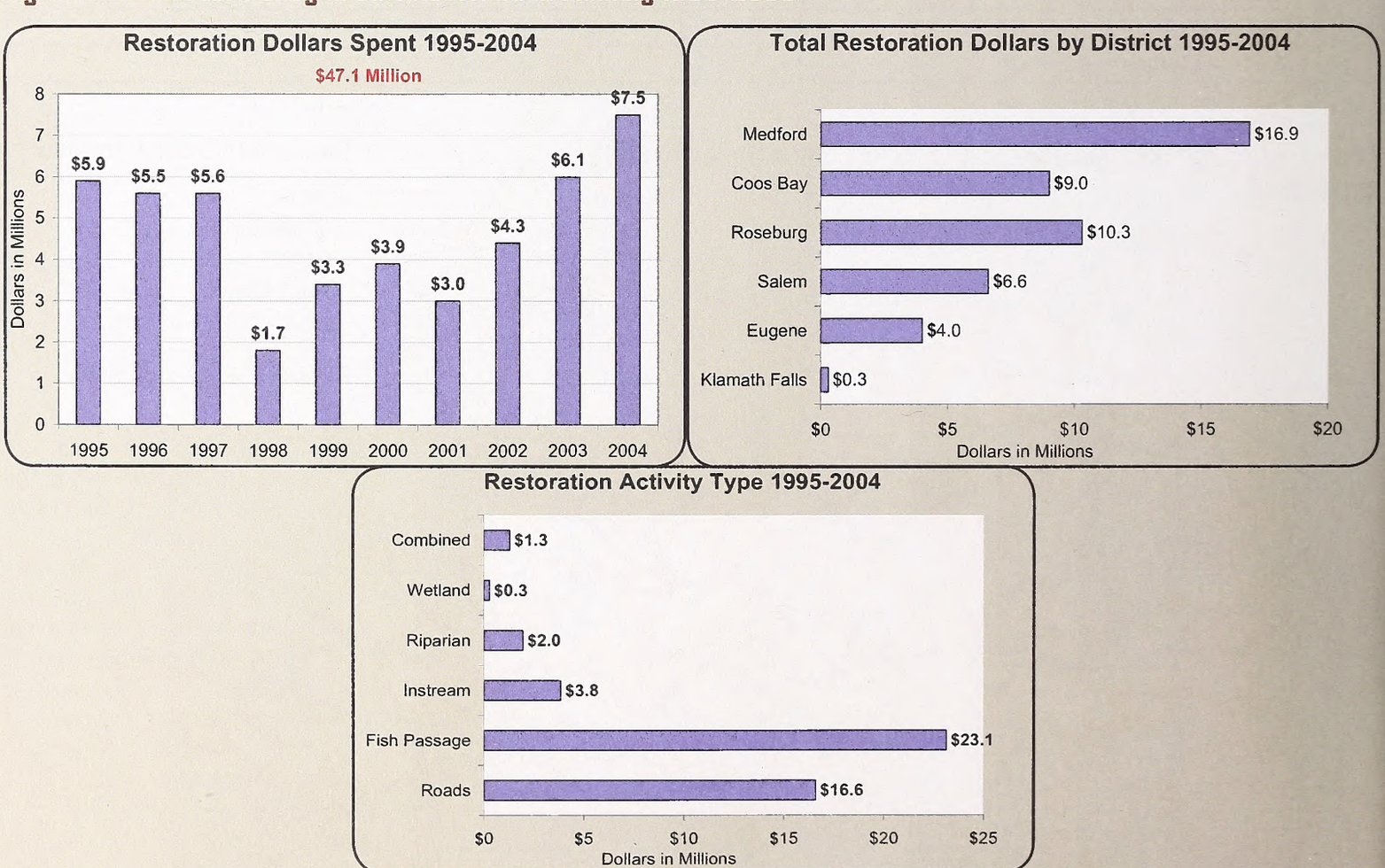
Risk Factor/Factors for Decline	Risk Level (Severity of Threat to Evolutionary Significant Unit Viability)
Ocean Condition	**Moderate**
Fishery Harvest	Low
Hatchery Impacts	Low
Stream Complexity	**Moderate**
Fish Passage	Low
Water Quality	Low
Water Quantity	Low
Other factors: disease, predation, etc.	Low

Cost and Benefit of Restoration Projects

Figure 53 shows that approximately 47.1 million dollars has been spent on restoration projects in Western Oregon BLM since 1995. Approximately 35% of this funding has been spent on road projects (mostly rock surfacing) and 49% on fish passage (culverts).

In the example of Oregon Coast coho, restoration funds were primarily spent on road work to reduce sediment delivery to streams. While this restoration was beneficial, water quality is not as much of a risk factor as stream complexity. In the future, restoration efforts could be targeted to address the most important risk factors for each population.

Figure 53 – Western Oregon BLM Restoration Funding 1995-2003



Culverts

Map 7 reflects the number of fish passage barriers that exist in the plan area. The map was created by ODFW in 1996 and updated and released in 2004.

The majority of fish passage barriers occur on private land. Relying on watershed partnerships is important in these watersheds to improve fish passage.

Removing barriers increases access for adults to reach spawning habitat and increases ability for juveniles to move within the stream channel during winter high flows and access cooler stream reaches during summer months.

In the last ten years, 284 culverts have been replaced on BLM that were barriers for anadromous and/or listed fish. As a result, 406 miles of stream became accessible to adults and juvenile fish. (See Figure 54.)

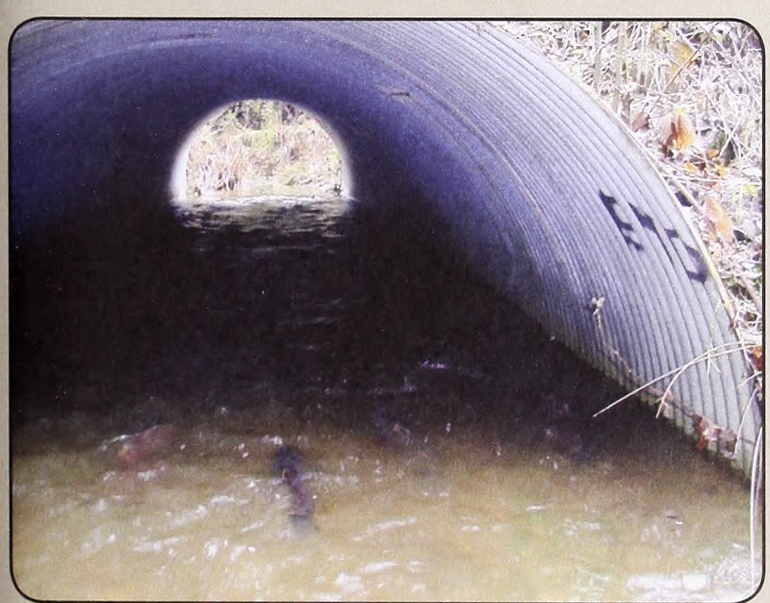
- On some districts, such as the Roseburg district, replacing 80 (40%) culverts has had a great influence on improving fish access by opening a large number of stream miles. However, there are still 118 barriers left to replace which would open an additional 59 miles for anadromous fish.

- On the Coos Bay district, 74 (82%) of culverts have been replaced which has opened a large amount of miles. However, replacing the remaining culverts would open 16 miles of anadromous fish bearing stream habitat.

- On the Salem district, 17 (47%) of culvert barriers have been replaced, but the number of stream miles opened is much lower than other districts. This is because most BLM ownership here is located near headwater portions of the watershed, and most barriers on anadromous fish streams are located on private land.

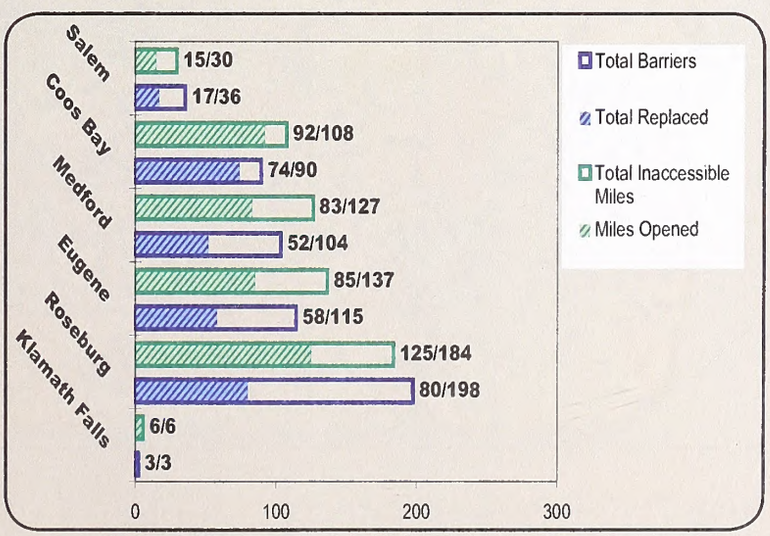
- Although the focus so far has been the replacement of culverts that are barriers to anadromous fish, there are still thousands of culverts which have not been inventoried on BLM land that may be barriers to resident and special status fish species.

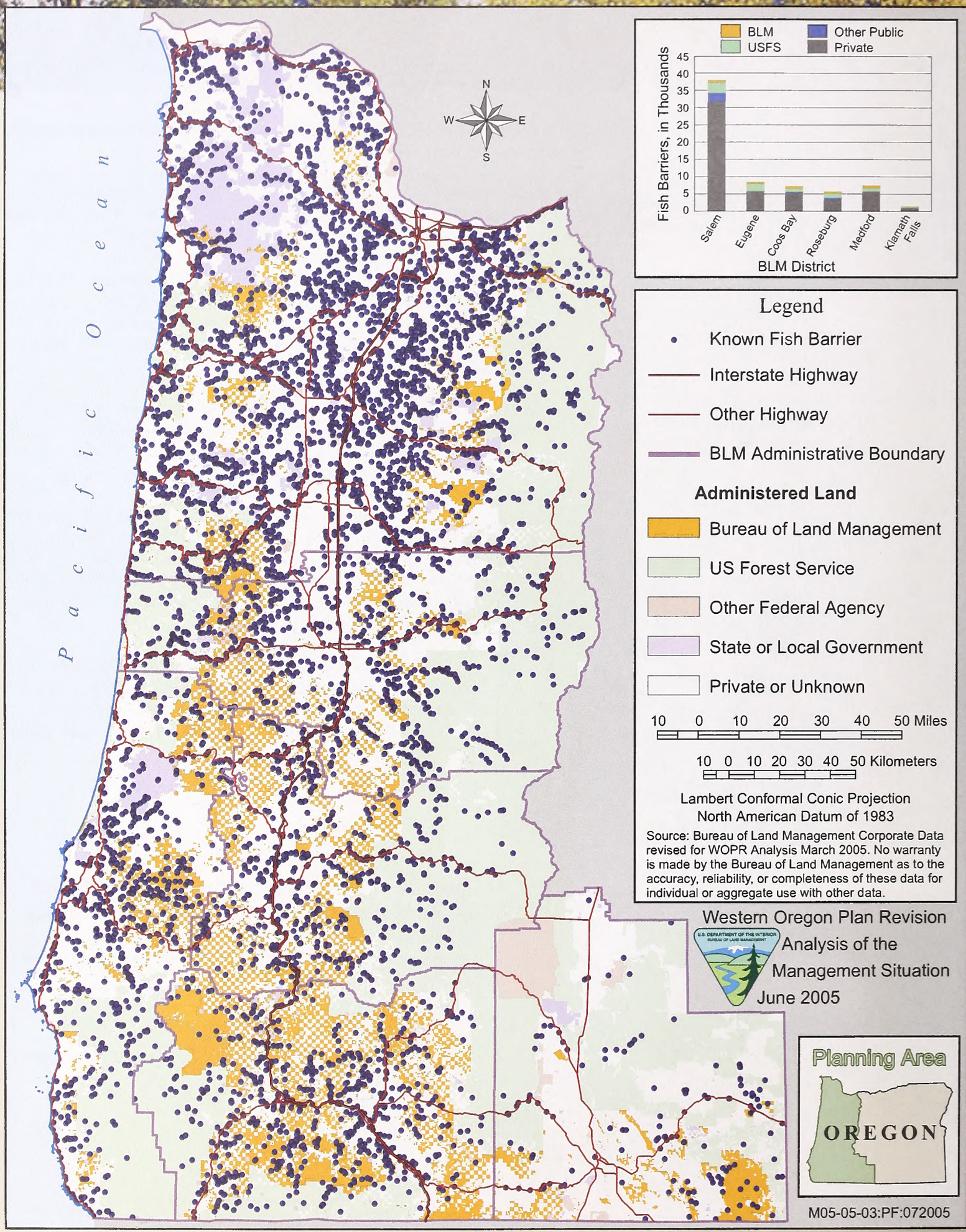
Before: Culvert is a complete barrier for fish.



After: New culvert allows fish passage.

Figure 54 – Culvert Replacement and Miles of Habitat Opened by District for Anadromous and/or listed fish 1995-2004





Map 7: Fish Passage Barriers

Debris torrent moving downstream.

Large wood placed in stream channel to increase complixity.

Instream Projects

Passive restoration relies on the growth of large conifers within Riparian Reserves and natural wood delivery to stream channels. Since tree fall rates are variable in nature, there may be long time periods between inputs to stream channels.

Adding large wood to channels where it is needed can increase stream complexity between episodic events.

Focusing on a combination of both passive restoration in the long term, and more active restoration efforts in the short term can have the greatest benefit to aquatic habitat.

Instream habitat projects have occurred on 110 miles of anadromous and/or listed fish streams in the planning area. For most BLM districts in the plan area, there is still a great need for additional instream projects on fish bearing streams.

The picture to the right shows an example of an instream large wood placement project. Large wood is important because it increases stream complexity; traps and stores gravel, and provides cover for fish.

Figure 55 shows the total stream miles and percent treated by district of anadromous and fish bearing streams.

Implementation of the resource management plans has focused on reducing road miles rather than instream restoration to improve aquatic habitat. Additionally, BLM's checkerboard ownership pattern makes it difficult to treat large lengths of stream reaches.

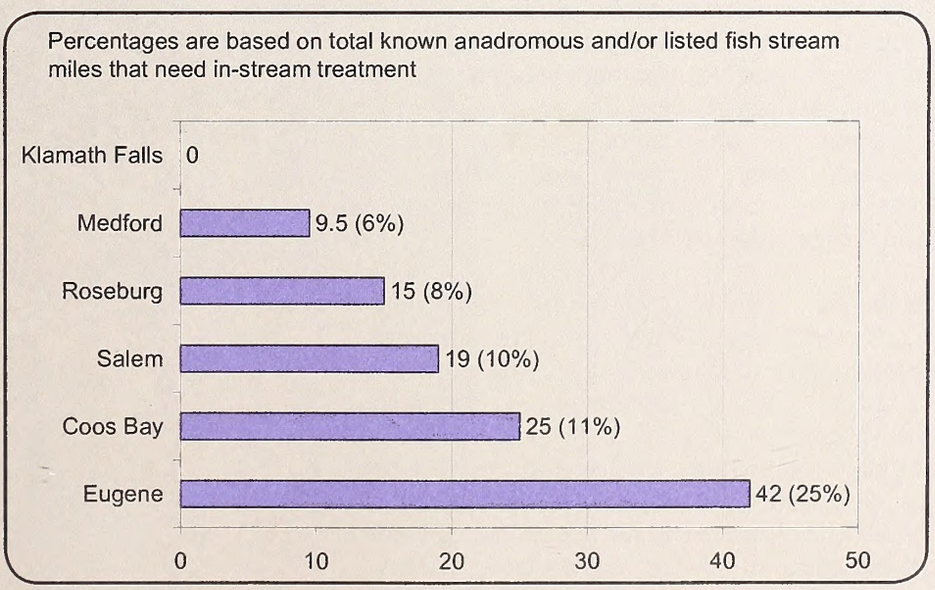
Many more opportunities exist for increasing stream complexity with habitat improvement projects.

Changes in aquatic habitat are incremental and although changes are often difficult to detect in a short time period (ten years), these efforts can provide significant benefits to fish habitat in the long term.

Headwater streams and unstable areas are important sources of large wood in larger fish bearing streams.

Large wood is often prevented from being delivered to fish bearing streams located downstream because of road crossings. (See Figure 56.)Wood is often subsequently salvaged to open the road for traffic, rather than retained in the stream system. The checkerboard nature of BLM lands limits road closure options to remedy this condition.

Figure 55 – Anadromous and Listed Fish Stream Miles Treated (1995-2004)



Roads

588 miles of BLM roads have been decommissioned within the plan area, however, there are over 14,278 miles of roads on BLM, most of which cannot be closed or decommissioned due to reciprocal rights of way agreements.

Decommissioning roads adjacent to stream channels can reduce sediment input to stream channels and lower hydrologic risk from culvert and road failure. However, many decommissioned roads were not located near stream channels.

Rather than focusing on reducing road miles, as emphasized in the Northwest Forest Plan, addressing existing road location and condition and chronic problem areas would better focus restoration efforts.

Log moving downstream blocked by culvert.

The Northwest Forest Plan Ten-Year Review and Preliminary Assessment

The Northwest Forest Plan Ten-Year Review and Preliminary Assessment of the Conditions of Watersheds indicate watershed conditions have improved over the last ten years. These results must be viewed cautiously because the results were not based on a complete set of parameters, and the program has not completed a full cycle of sampling

The review relied on road decommissioning as a major indicator to assess watershed health. While road density may be important to watershed health, the location and condition of roads along streams may be a better focus to evaluate and improve aquatic condition.

The Aquatic Conservation Strategy was designed to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. Its focus is habitat rather than species populations because, for anadromous species such as salmon, ocean currents and other factors outside the control of forest management can affect population numbers.

Scientific studies completed after the Northwest Forest Plan was implemented support the framework and assumptions of the Aquatic Conservation Strategy, particularly the ecological importance of smaller, headwater streams and the retention of streamside forests protected in buffers. A growing body of science about the dynamics of aquatic and riparian ecosystems, however, could provide a foundation for developing new management approaches and policies.

Key Watersheds

Key Watersheds do not always coincide with areas that are important for fish. For

Figure 56 – Evans Creek Watershed Road and Stream Crossings

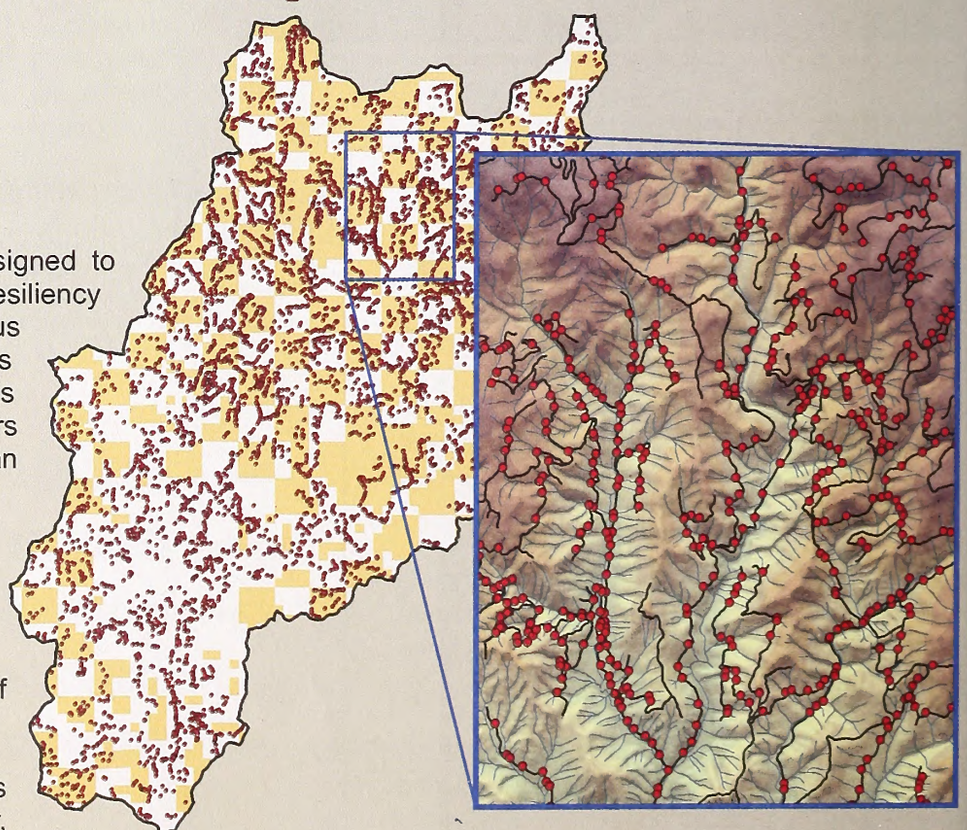
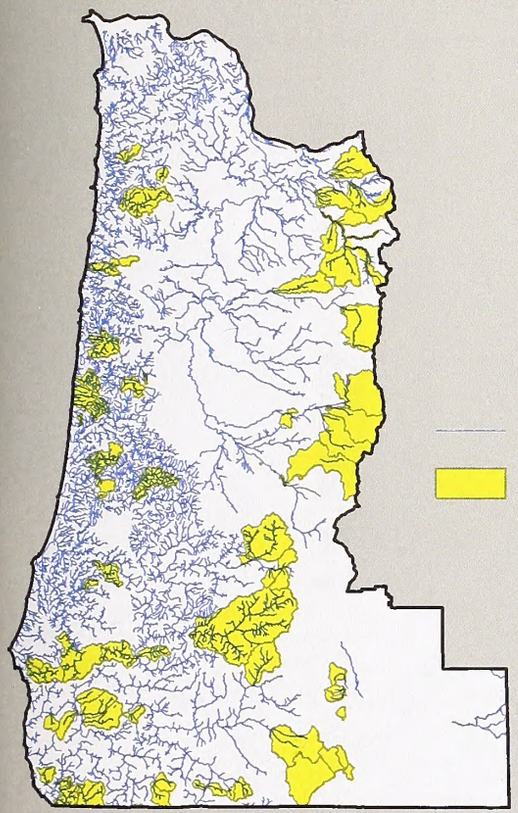


Figure 57 – Key Watersheds and Streams within the Plan Area



example, within the Upper Willamette River basin, dams block access to approximately 400 miles of salmon and steelhead spawning reaches. Although Key Watersheds have been designated in historic salmon and steelhead spawning areas, many of these areas are located above dams.

Figure 57 shows that restoration efforts may be more effective if they were focused on high intrinsic potential streams and areas within recovery plans, rather than key watersheds, as emphasized in the Northwest Forest Plan. Identification of these areas should be coordinated with the National Marine Fisheries Service and U.S. Fish and Wildlife Service Technical Recovery Teams.

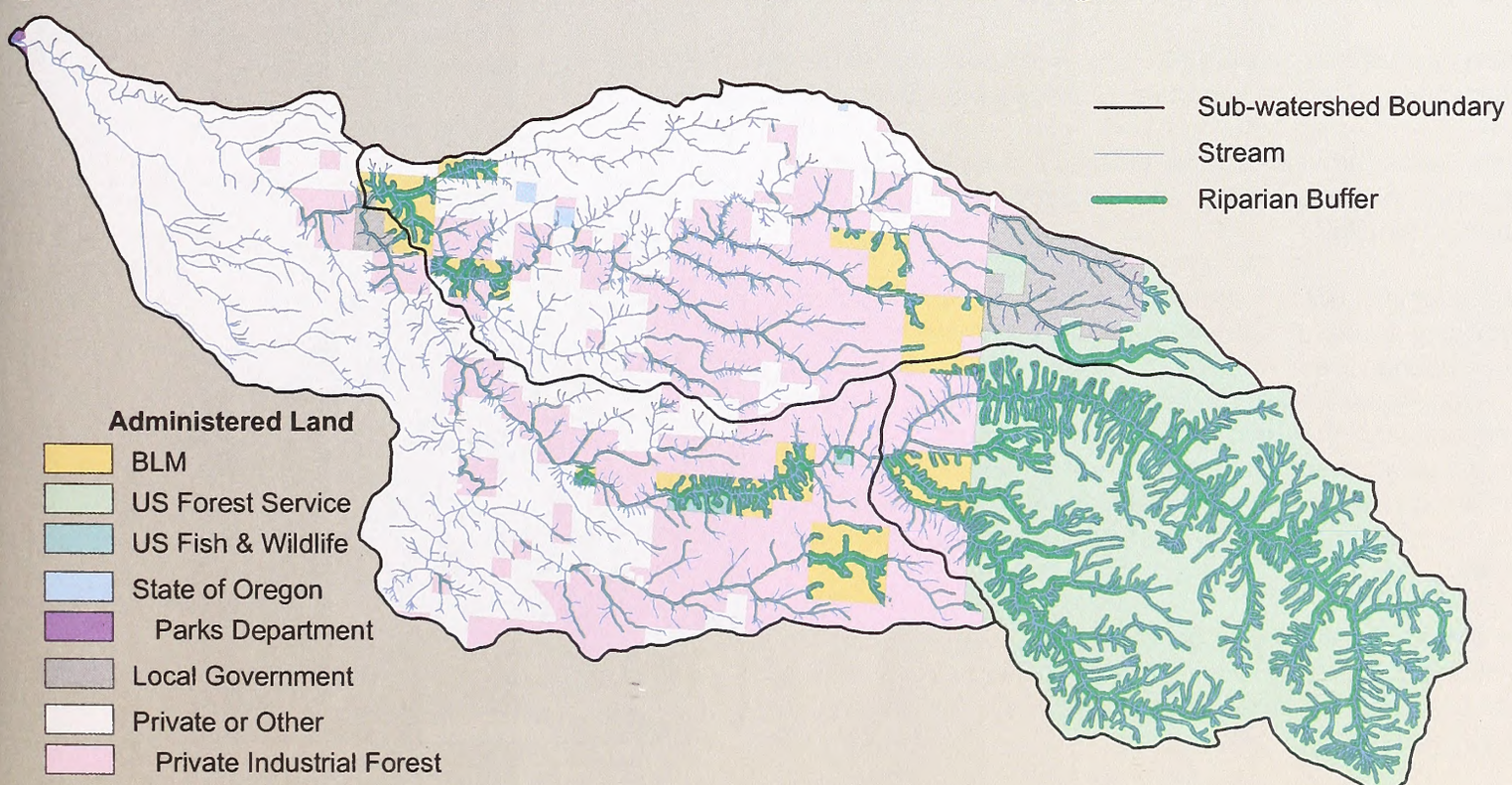
Riparian Reserve Management and Aquatic Habitat

Figure 58 shows an example of the varying widths of riparian reserves or buffers on private, state and federal lands in the Eagle Creek Watershed.

This map shows that given the checkerboard ownership pattern in this watershed, BLM's ability to manage the riparian ecosystem as a whole within the watershed is limited.

The Northwest Forest Plan emphasizes the development of large, older riparian trees. These trees will eventually provide large wood for streams which are an important component of habitat complexity.

Figure 58 – Northwest Forest Plan, State Forest Practices Act and Reserves, Eagle Creek Watershed



Mid-seral or younger conifers are also important and can contribute to stream function. The Northwest Forest Plan Effectiveness Monitoring Science Synthesis Report (USFS, 2005, in draft) suggests that a growing body of science regarding the dynamics of aquatic and riparian ecosystems could provide a foundation for developing new management approaches. These new approaches suggest a disturbance ecology concept that is based on natural patterns of disturbance and a range of stand ages.

Trees of the middle class size group may be generally lacking in Riparian Reserves. Improving the growth trajectory of young, dense stands through thinning may more rapidly increase the amount of middle age conifers.

Density management has occurred on approximately 14,000 acres of young, dense, managed stands in the riparian reserves to improve tree size and vigor and set a trajectory to achieve an old growth stand. Within the plan area, many riparian stands on BLM are within the seedling, small and medium size classes. Figure 59 show the riparian reserve size classes for the Salem and Coos Bay districts.

On the Salem district, approximately 70% of trees within the riparian reserve are less than 29 inches in diameter. On the Coos Bay district, approximately 73% of Riparian Reserves are less than 29 inches.

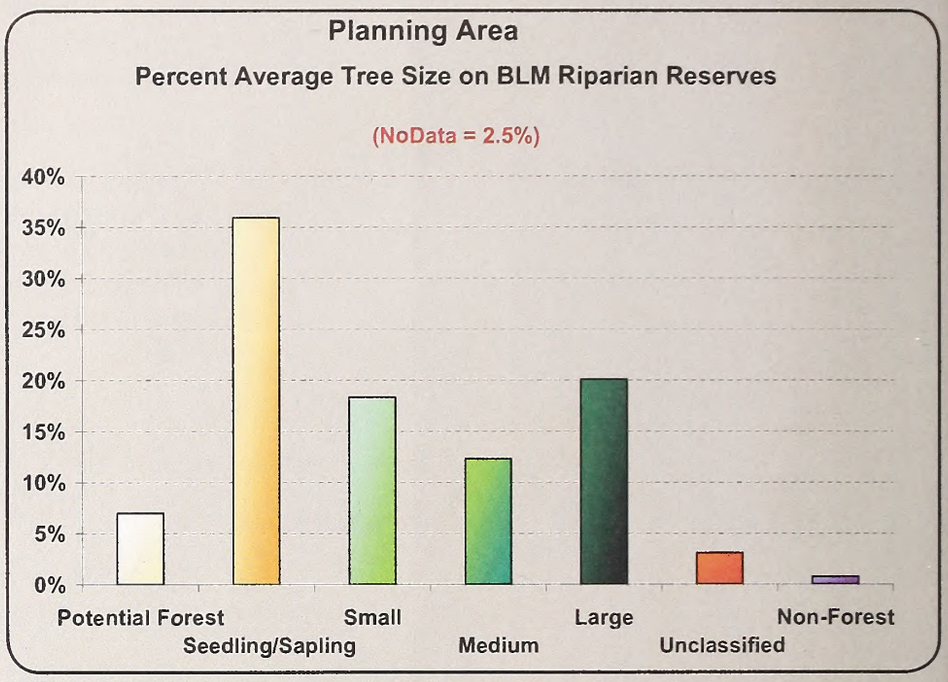
Most riparian stands were forested in the past with a mix of conifers and hardwoods. Both are important to diversity of aquatic habitat.

Hardwoods provide critical biological function (food) to streams, whereas conifer species provide more physical function (habitat).

Management within riparian reserves should focus on providing a mix of species to create a diverse and multi-story riparian area. For example, many riparian areas in the Oregon Coast Range mountains are dominated by alders and are largely missing the conifer component. In other areas, conifers dominate stands and are largely missing an historic hardwood component. Figure 60 shows the species that are dominating riparian reserves on the Coos Bay district.

In areas of the Oregon Coast Range mountains that are dominated by hardwoods, a lack of conifers along streams can contribute to simplified aquatic habitat. This situation is a risk factor for salmonids.

Figure 59 – Riparian Reserve Tree Size (Salem and Coos Bay Districts)



In these areas, removing a portion of alder is necessary to restore the conifer component of the riparian reserve. In other areas, conifers must be released to retain both the alder and conifer component of the riparian area.

Figure 60 shows that, on the Coos Bay district, riparian reserves that provide greater canopy cover for stream channels are generally conifer dominated. Riparian reserves with little canopy cover are generally hardwood dominated.

Riparian Reserve in the Oregon Coast Range dominated by hardwoods.

Management Opportunities

Aquatic Habitat and Fish Populations

Based on BLM's ability to influence the aquatic habitat and fish populations, restoration could be better targeted to:

- Watersheds where BLM ownership is in areas that can deliver large wood and bedload.
- Risk factors for each fish population.
- Habitat improvement projects based on high intrinsic potential streams.
- Assess the location and effectiveness of Key Watersheds.

The plan revision should be linked to Endangered Species Act Recovery Plans and recovery planning currently underway for listed fish. Planning efforts should coordinate restoration targets and management opportunities with these plans, which should then facilitate later consultation.

Road Network and Limiting Factors

The current plan focused restoration priorities on reducing road miles rather than in-stream restoration. The BLM has limited opportunity to reduce road density. However there are opportunities to:

- Use road location and condition to target restoration of chronic problem areas;
- Improve road conditions through partnerships to benefit watershed condition;.
- Improve efforts to retain large wood in stream channels where the road network has limited wood routing.

Riparian Reserves

Both conifer and hardwood tree species are an important component of riparian areas. Management direction should recognize the need for active management to:

- Restore alder dominated stands to mixed conifer and hardwood stands where warranted.
- In addition, continue efforts to increase conifers.
- Manage young, dense stands to increase the mid-seral component.
- Examine alternative management approaches to the Aquatic Conservation Strategy for riparian area management.

Other Changes

Additionally, the plan revision will provide an opportunity to clarify or refine management direction to improve RMP implementation. Table 13 describes these opportunities for fisheries.

Figure 60 – Proportion of Canopy Cover (Conifers versus Hardwood) in Coos Bay District

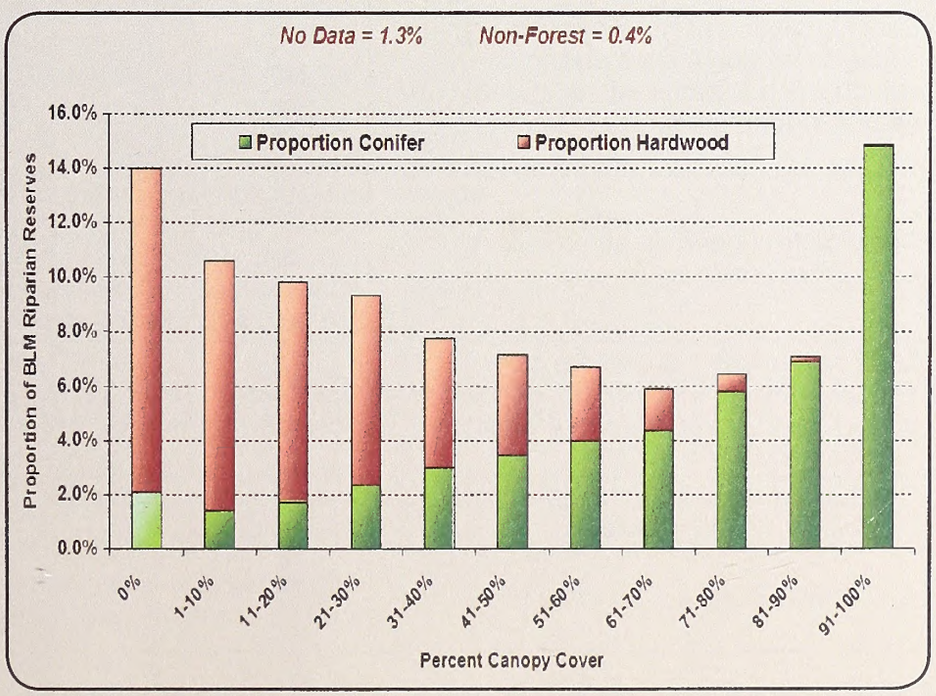


Table 13 –Potential Refinement of Current Management Direction for Fisheries

Planning decision	Remarks (rationale)	Options for change
Salvage of roadside and hazard trees within late successional reserves and riparian reserves	Refining plan would address issue of large wood routing with current stream and road network.	Specific clarification on disposition of large wood within road crossings and riparian reserves.
Water infrastructure / fisheries Northwest Forest Plan did not address water infrastructure issues and FERC licensing	Issue in Klamath Falls – plan should identify effects to fish populations.	Best Management Practices or discussion on how to address this issue
Ecoregions	Current plan uses general boundaries	Define to 5th Field Boundaries
Stream condition rating system of (excellent, good, fair, poor) and "properly functioning"	Is this system still valid based on best available science?	Use criteria that is attainable and based on realistic habitat goals
Riparian reserve standard and guidelines wording: riparian reserves are designated on "seasonally flowing or intermittent streams, wetlands less than one acre, and unstable and potentially unstable areas"	Terms are vague and unclear. Addresses issue of where buffers might occur	Clarification of terms. Update with new, specific information by ecoregion.
Riparian reserve standard and guidelines: current language to remove campgrounds that prevent attainment of Aquatic Conservation Strategy objectives	Objective isn't realistic for most districts and most campgrounds are near streams.	Remove or re-define with Best Management Practices to minimize disturbance to aquatic habitat
Roads management: "Provide and maintain fish passage at all road crossings of existing and potential fish bearing streams".	Doesn't allow leeway for special circumstances where a barrier may be just upstream from crossing.	Add clarification for site specific circumstances. Update to Oregon Department of Fish and Wildlife, road/stream crossing guidelines and National Oceanic and Atmospheric Fisheries guidelines
Timber management "Riparian reserves acres are not included in calculations of the allowable sale quantity".	Allowing inclusion to allowable sale quantity may allow restoration to occur under timber sales or through stewardship contracting.	
Best Management Practices wording: "Culverts or pipe arches placed on valuable fish streams will be at 0-0.5% or natural stream grade".	No definition for "valuable"	Add clarification for site specific circumstances. Update to Oregon Department of Fish and Wildlife, road/stream crossing guidelines and National Oceanic and Atmospheric Fisheries guidelines.
Applying full riparian reserve buffers around fire ponds	Affects ability to manage fire ponds. Buffers around ponds not likely providing protection to native fish species in all circumstances (most fire ponds have exotic species)	Allow site specific exemptions for fire ponds or clarify actions for fire ponds with native fish or special status species
Land exchanges – should be more aggressively pursued and supported by plan. Existing plan lists key drainages – these need to be updated	Good way to block up high intrinsic potential streams for fish	Re-list key drainages / prioritize
Conducting small sales to make logs available for habitat projects	Identify new opportunities for large wood projects	
New RMP should support Fire Plan	Affects objectives where high fuel loading occurs in riparian reserves.	Could support in general (match up to Fire Plan goals/actions) or have specific section on this.

Hydrology

Key Points

- Watershed by watershed demonstration of water quality compliance through Water Quality Restoration planning is time consuming, often redundant with existing plans, and diverts resources from on the ground projects.
- The intermingled nature of O&C lands has proven problematic in assessing the cumulative effects of BLM management actions on watershed condition.
- Emphasize partnerships in watersheds with checkerboard ownership patterns to assist in addressing sediment issues.
- Existing Riparian Reserves include areas that do not significantly contribute to water quality or flow protection or processes.
- Source water protection areas for public drinking water systems as defined in the 1996 Safe Water Drinking Act Amendments should be incorporated into the plan revision along with management opportunities and Standards and Guidelines.

Hydrology

Current Conditions and Context

Most BLM lands in the planning area are on moderate to steep dissected mountains. In the Coast Range, BLM lands are often within the headwaters portions of watersheds and in the Willamette Valley, Cascades and Rogue-Siskiyou Regions are scattered through middle and lower sections of watersheds. Watersheds within the planning area include a high proportion of seasonal streams.

BLM watersheds fall within different physiographic provinces, representing variances in vegetation, geology and climate. These differences are manifested as stream pattern, stream size, seasonality of flow, and species and assemblage of forest vegetation.

Many BLM watersheds contain water quality limited streams. In western Oregon, there are 10,611 miles of listed streams. Of these, 704 miles fall within BLM lands. In contrast, many BLM watersheds have high quality water source areas and some feed surface water to public water systems.

The Aquatic Conservation Strategy

The Aquatic Conservation Strategy is intended to protect aquatic ecosystems and the ecological health of watersheds. The strategy includes:

- Riparian Reserves
- Key Watersheds
- Watershed Analysis
- Watershed Restoration

The nine Aquatic Conservation Strategy objectives describe the goals for management of aquatic resources.

- These objectives were intended to be accomplished over a long period of time (100+ years).
- The relevant scale for evaluating progress toward achieving Aquatic Conservation Strategy objectives is the fifth –field watershed or broader.

Aquatic Conservation Strategy Objectives

1. Maintain and restore the distribution, diversity and complexity of watershed and landscape-scale features.
2. Maintain and restore spatial and temporal connectivity within and between watersheds.
3. Maintain and restore the physical integrity of the aquatic system.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.
5. Maintain and restore the sediment regime, under which the aquatic ecosystem evolved.
6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats.
7. Maintain and restore the timing, variability, and duration of floodplain inundation.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian dependent species.

- The baseline from which to assess maintaining or restoring the watershed condition is developed through watershed analysis.
- Individual projects are deemed consistent with Aquatic Conservation Strategy objectives if they follow established Standards and Guidelines.
- The Aquatic Conservation Strategy does not identify a targeted distribution of watershed conditions nor does it set objective targets for assessing the trend of watershed condition over any particular time period.

Accomplishment of Aquatic Conservation Strategy objectives at the fifth field scale is not always attainable given the intermingled nature of O&C lands and the limited amount of BLM lands administered in many watersheds. It is difficult to detect or determine the direction of long-term watershed trends in the short term because of few developed comparison or quantifiable measures.

Riparian Area Management

Hydrologic functions of riparian areas include:

- Shade and thermal protection from the sun.
- Stream bank stability.
- Filtering to slow or prevent delivery of nutrients or solids from upslope areas
- Moist micro climates.
- Recruitment areas for large wood that naturally falls into the streams.
- Pathways along streams for the distribution of water, wood, sediment and nutrients to downstream areas.

Unthinned Riparian Stand.

Many riparian stands require silvicultural treatments or stand conversion in order to develop desirable stand characteristics for aquatic systems. Beneficial characteristics include multiple canopies that provide redundant sources of shade. The photographs below illustrate the contrast between treated and untreated stands.

Thinned Riparian Stand.

Vegetation management at a watershed scale within the Riparian Reserves has been limited. There has been little or no treatment immediately adjacent to streams and variable approaches in the outer riparian zones area with a mixture of no cut and density management. Limited stand conversion has been attempted.

A lack of active management in previously managed stands may result in tree mortality, blowdown, susceptibility to fire and disease, and formation of brush fields. This can delay or prevent attainment of Riparian Reserve objectives.

Hardwood riparian trees are disturbance species that recolonize along streams, floodplains and stream debris torrent tracks following large floods. Hardwoods have also spread along roads where they parallel streams and have provided a seed source for establishment in conifer streamside areas. Although important for biodiversity and a food source for fish and wildlife; an overabundance may be less desirable.

Riparian Reserve Widths

Riparian Reserve widths were broadly based on ecologic and geomorphic factors, but were applied uniformly pending watershed analysis. Some adjustment to the interim widths described in the Northwest Forest Plan was allowed (primarily for intermittent streams). Such adjustments have rarely been made due to:

- Uncertainty over habitat benefits to terrestrial species within Riparian Reserves;
- Detailed and complex additional watershed analysis planning requirement (Riparian Reserve module).

Riparian Reserves are applied uniformly along a stream and are often wider than what is actually needed for riparian functions. Figure 61 shows the Riparian Reserve widths, which often do not match the structure and function of riparian areas.

NWFP Interim Riparian Reserves Widths (on each side of channel):

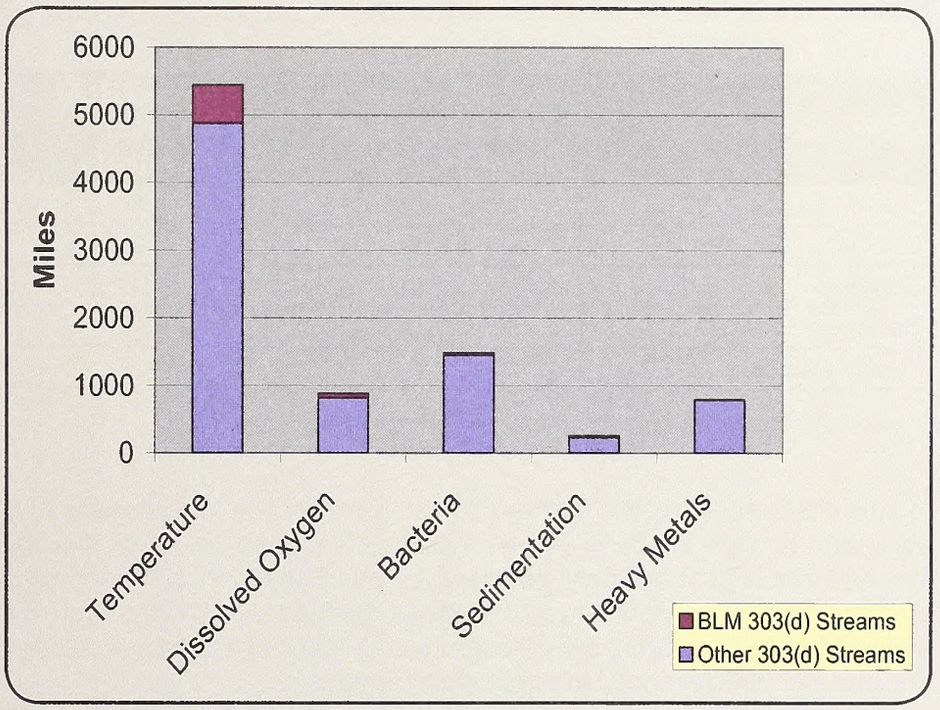
- **2x the Site Potential Tree Height or 300' on Fish bearing streams**
- **1x the Site Potential Tree Height or 150' on Non-fish Streams**
- **1x the Site Potential Tree Height or 100' on Intermittent streams**

The Forest Ecosystem Management Assessment Team Report and the draft environmental impact statement for the Northwest Forest Plan concluded that a Riparian Reserve equaling one half of a site potential tree height for intermittent streams was sufficient to meet water quality and aquatic habitat concerns. The riparian reserve width of a full site potential tree height for intermittent streams was adopted in the Record of Decision for the Northwest Forest Plan to add mitigation for environmental effects not related to aquatic habitat.

Water Quality

There are 10,611 stream miles in the planning area that are listed as impaired for at least one water quality measure. As shown in Figure 62 and Table 14, the most common listing by far on BLM administered lands in the plan area is water temperature.

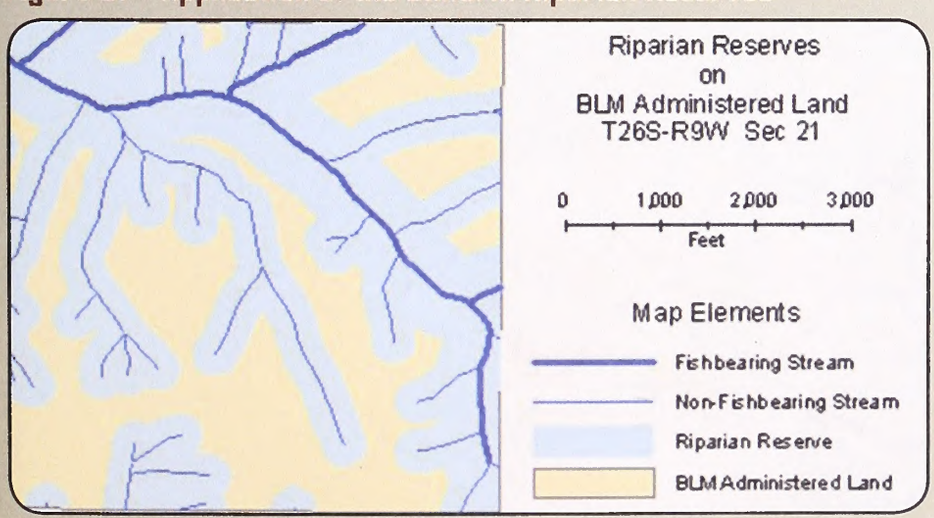
Figure 62 – 303(d) Listed Streams in the Plan Area



Streams are de-listed when a Total Maximum Daily Load and Water Quality Management Plan is completed and approved by the Environmental Protection Agency. The BLM must complete a Water Quality Restoration Plan for watersheds with listed parameters within 18 months of issuance, using a protocol developed cooperatively between the BLM, Forest Service and the Oregon Department of Environmental Quality.

Oregon Department of Environmental Quality, U.S. Forest Service and BLM have collaborated on a framework, known as the "Temperature Total Maximum Daily Load Implementation Strategies" for analysis of water temperature. The strategy uses regional shade curves to demonstrate that passive and active management of Riparian Reserves can improve water quality.

Figure 61 – Application of the Uniform Riparian Reserves



Watershed by watershed demonstration of water quality compliance is time consuming, redundant, and often diverts resources from other planning or on the ground work. Completed Water Quality Restoration Plans (for temperature) show that streamside forests through BLM most often already fully meet shade goals.

Figure 63 depicts streams listed as water quality limited in a representative watershed. Listed streams cross many ownerships. Most streamside areas on BLM lands already meet shade targets for water temperature.

Roads can deliver sediment to streams unless the road and drainage system is managed

Table 14 – Miles of BLM Streams on the Oregon Department of Environmental Quality (ODEQ) 303(d) List

ODEQ 303(d) Listing	Stream Impairment Identified on BLM* (miles)	Affected BLM Fifth Field Watersheds
Temperature	569	81
Dissolved Oxygen	65	23
Bacteria	35	17
Sediment	27	5
Heavy Metals	8	2

**Based on ODEQ 2002 303(d) list (last fully summarized reporting period)*

to limit offsite movement. Delivery of sediment can be low intensity and persistent or high intensity and temporary, depending on storm events. The patterns of BLM alternating ownerships and Right-of-Way Agreements with private owners are important factors for road management. Figure 64 shows BLM road control as a proportion of all roads within representative low ownership watersheds in the planning area.

BLM has very limited ability to control sediment in many watersheds with large amounts of private land since the road network is largely managed by others.

Even in watersheds with a larger BLM presence, Reciprocal Right-of-Way Agreements can limit BLM management options

Winter Use Road.

Approximately 4% of BLM managed roads have been decommissioned or partially decommissioned (storm-proofed) from 1994 – 2005. Many of these road segments are outside Riparian Reserves in stable areas and often did not provide a great deal of benefit for reducing sediment delivery to streams.

Figure 63 – 303d listed and Coho-bearing streams in the Upper Smith River Watershed

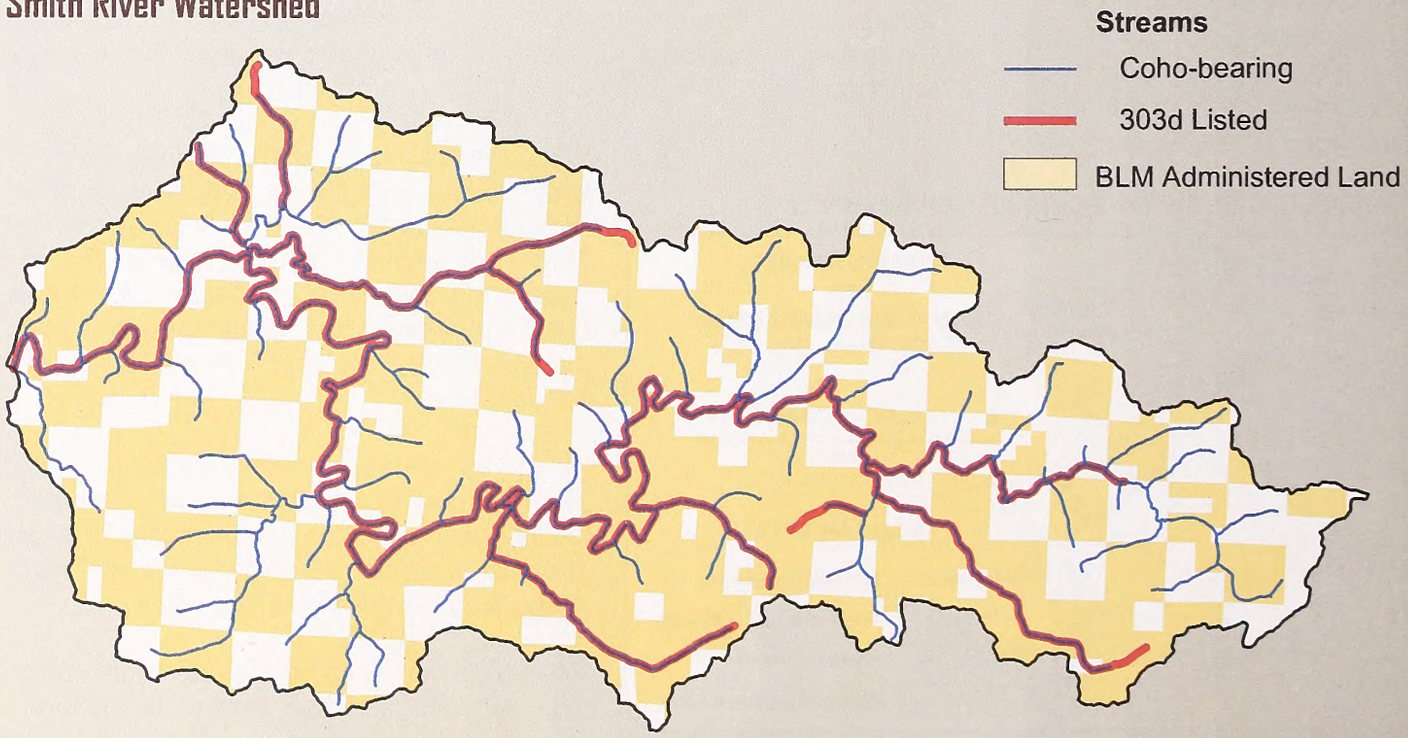
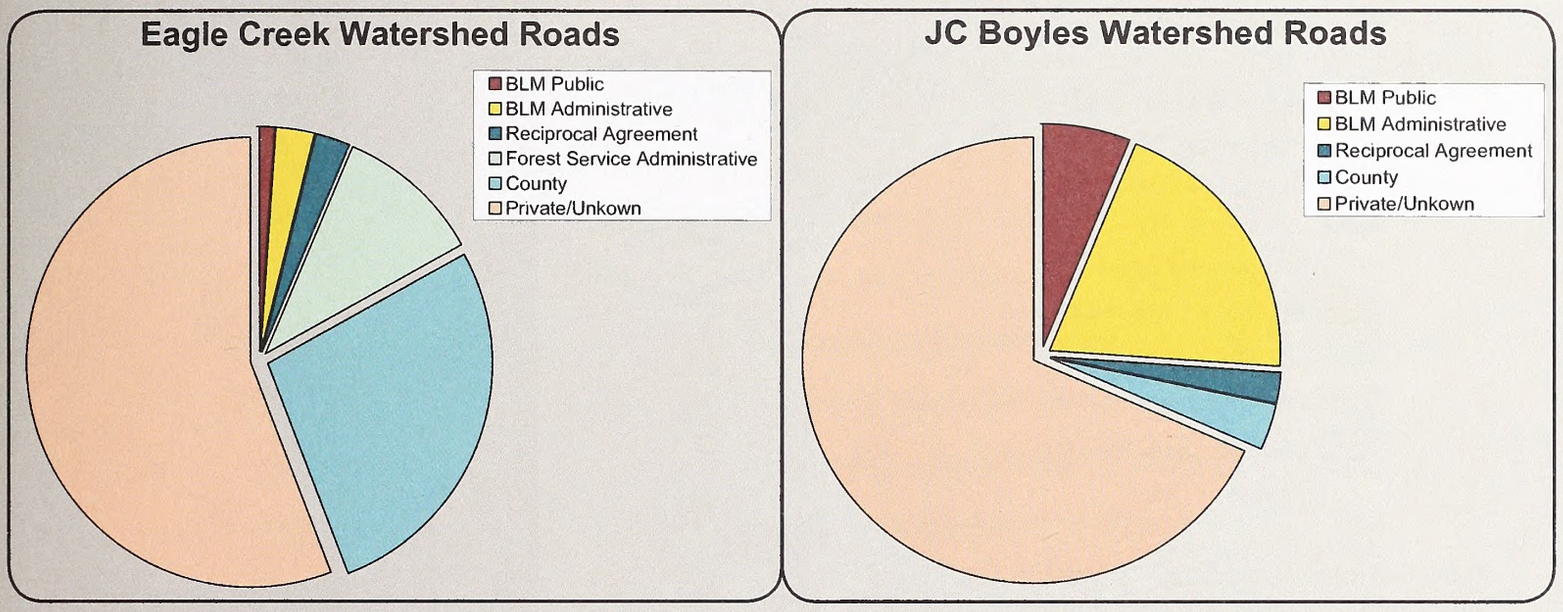


Figure 64 – BLM Road Control as a Proportion of All Roads in Two Representative Watersheds



Road Decommissioning.

Routine road maintenance activities are beneficial in controlling sediment delivery to streams. These activities have been on the decline due to reduced timber harvest and less road maintenance deposits.

Watershed Analysis and Cumulative Effects

Watershed analysis has been completed in nearly all watersheds in the planning area, which was envisioned under the Northwest Forest Plan as a first step in ecosystem planning and management. This monumental effort has resulted in more than 150 separate fact finding documents each taking 2-6 months to complete by an interdisciplinary team of specialists. The watershed analysis collectively includes many thousands of pages of watershed characterization, analysis and recommendations.

Road Erosion Due to Delayed Maintenance Frequency.

The intermingled nature of O&C lands with private lands has proven problematic in assessing the implications of BLM management actions on watersheds processes, particularly cumulative effects. Data on private lands is difficult to obtain and is often sketchy.

Figure 51 (from the previous Fisheries section) shows that watershed analysis and hydrologic cumulative effects analysis is particularly challenging in watersheds with intermingled ownership. BLM manages a small percentage of the lands in the planning area and they are normally scattered within many watersheds. In addition,

- There is uncertainty regarding what constitutes a credible and sufficient cumulative effects analysis.

- Watershed analyses contain important data that can be useful in cumulative effects analysis,

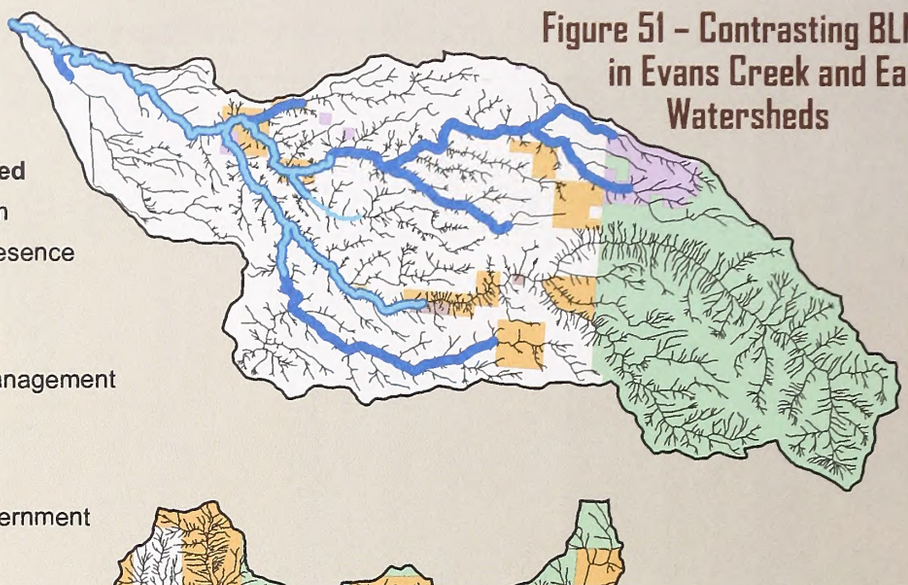


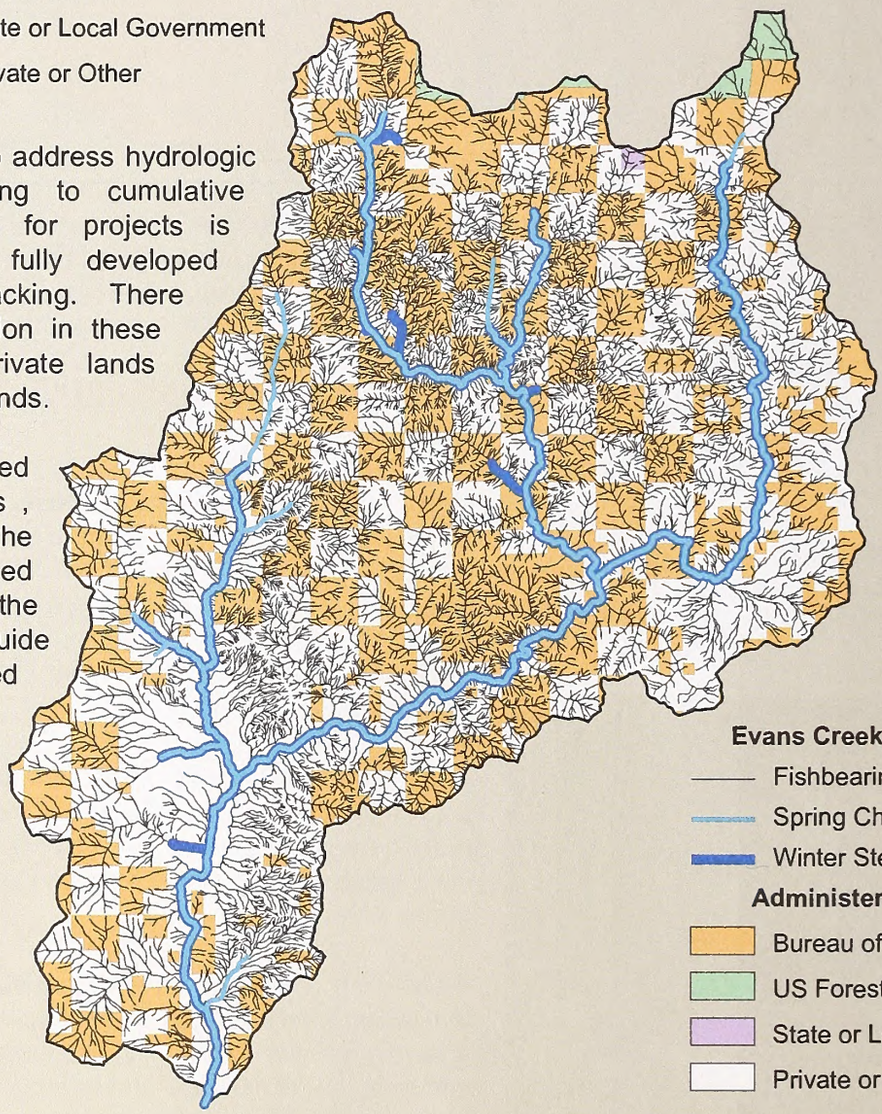
Figure 51 – Contrasting BLM ownership in Evans Creek and Eagle Creek Watersheds

Eagle Creek Watershed
- Fishbearing Stream
- Spring Chinook Presence
- Coho Presence

Administered Land
- Bureau of Land Management
- US Forest Service
- Other Federal
- State or Local Government
- Private or Other

however, data to address hydrologic questions relating to cumulative effects analysis for projects is sometimes not fully developed or completely lacking. There is less information in these analyses for private lands than for public lands.

- Existing watershed analyses, completed at the Fifth field watershed scale, follow the Federal Guide for Watershed Analysis; however, they vary in content and analytical methodology.



Evans Creek Watershed
- Fishbearing Stream
- Spring Chinook Presence
- Winter Steelhead Presence

Administered Land
- Bureau of Land Management
- US Forest Service
- State or Local Government
- Private or Other

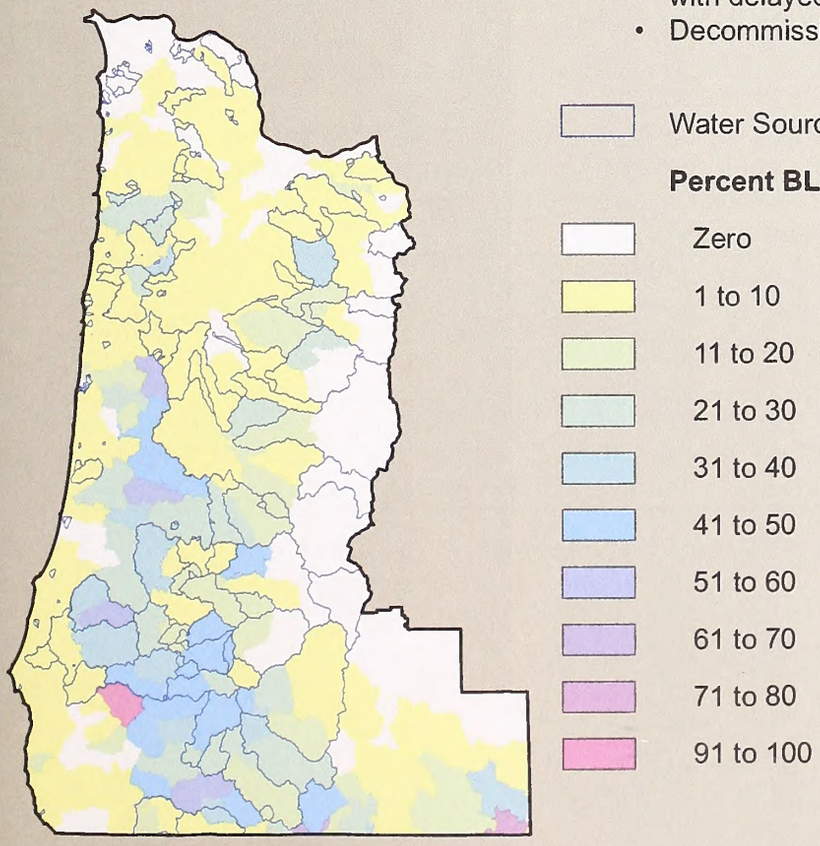
Safe Drinking Water Act and Maintenance of High Quality Waters

The 1996 Safe Water Drinking Act Amendments require identification and management of source water protection areas for public water systems. This has implications for BLM land management in watersheds that provide water to public water systems (Figure 65).

High Quality Waters, North Fork Chetco ACEC.

Although, current management direction is designed to maintain water quality, it does not specifically address the need to maintain water quality delivered to public water systems from BLM lands. The system of Key Watersheds were primarily designed for aquatic refugia, but also included a Tier 2 designation for water quality protection of "high quality waters." Many source water protection areas on BLM lands that deliver water to public water systems are currently not Tier 2 key watersheds.

Figure 65 – Water Source Watersheds on BLM in the plan area



Management Opportunities

In most natural stands within riparian reserves, passive management can be an appropriate strategy to maintain or enhance water quality over the short and long term.

In most previously managed stands within Riparian Reserves active management can be designed to ensure long term ecological objectives are attained while accepting some short term impacts.

An alternative approach to the application of uniform riparian reserve widths could apply variable Riparian Reserve widths which would match riparian areas and wetlands structure and functions including:

- Water temperature (shade producing trees and vegetation).
- Water filtering which controls sediment or nutrient delivery from roads or other management activities.
- Microclimate.
- Large wood recruitment.
- Unstable lands.

The Aquatic Conservation Strategy could be refined to identify a targeted distribution of watershed conditions facilitating the assessment of progress towards achieving objectives.

The Plan revision could be used as an opportunity to fulfill the requirement to complete Water Quality Restoration Plans.

The plan revision could be used to provide a framework for a more targeted, prioritized road restoration program.

- Storm proofing practices could to be undertaken on system roads with delayed maintenance intervals.
- Decommissioning or restoration activities could be focused on riparian areas, road drainage and key culverts to better deal with sediment issues.

Increase emphasis on partnerships with adjacent landowners in order to reduce sediment delivery to streams.

Develop an approach to cumulative effects analysis that addresses the complexities of managing in mixed ownership watersheds.

Develop management direction or best management practices that would specifically apply to public use watersheds as addressed in the Safe Drinking Water Act.

Re-evaluate the purposes and location of existing Tier 2 Key Watersheds.

Table 15 describes opportunities to clarify or refine management direction for hydrology.

Table 15 –Potential Refinement of Current Management Direction for Water

Planning decision	Remarks (rationale)	Options for change
Definition of Intermittent Streams and Wetlands less than one Acre	The intermittent streams and wetlands less than one acre definitions are confusing	Clarify the language
Best Management Practices design	The purpose and structure of Best Management Practices design for projects for non-point source pollution control are not clear.	Include discussion on the framework of a Best Management Practice design for a project including: site assessment, description of beneficial uses, and choice of Best Management Practices.
Best Management Practices	Timber harvest technology, road building and maintenance practices, and mining activity should be reexamined to assure maintenance of water quality from non-point sources of pollution.	Include some of the more common Best Management Practices that are routinely applied as RMP management direction. Refine existing best management practices.
Salvage within Riparian Reserves	Windthrow along riparian roads or flood stream debris lodged at stream crossings requires immediate removal. Decisions must be made to either salvage harvest timber or distribute in the Riparian Reserve or stream channel	Clarify management direction
Hardwood conversions within Riparian Reserves (Coast Range)	Specify criteria for valley streams and floodplains, susceptible to flooding and headwater streams susceptible to torrents, where it would not be appropriate to convert stands. Specify criteria for hardwood retention in riparian areas in non-fluvially rejuvenated areas.	Opportunity to clarify management direction and extent of hardwood conversions in fluvial disturbance and non-disturbance areas.
Deferred Watersheds for Entry – Medford	RMP specifies reevaluation in the next plan or 10 years. Watersheds deferred because of high cumulative effects from management activities. Involves 49,636 acres for cumulative effects and 4000 acres for paired watershed studies.	Opportunity to re-evaluate cumulative effects in these and all plan area watersheds.
Land Exchanges	Existing plan lists key areas. Can be used to block up high value streams, including important floodplains and wetlands, and source water protection areas for public water systems.	Re-list key drainages / prioritize
Fire Plan	Possible effect on water quality, depending on type and implementation of prescriptions, where high fuel loading occurs in riparian reserves	Include water quality protection goals and Best Management Practices in the Fire Plan.

Fire/Fuels Management

Key Points

- There has been an increasing public awareness of wildfire issues particularly within the Wildland Urban Interface.
- Increases in fire intensity and severity have resulted in increasing awareness and funding for hazardous fuels treatments.
- Fire exclusion or passive management results in larger, more severe, and more costly fires.
- In the absence of natural fire as a disturbance agent, management activities can be designed to partially serve as a surrogate for natural disturbance and change.

Fire/Fuels Management

Current Condition and Context

- Fire has played a major role in shaping forests across the planning area. The Northern Districts such as Eugene and Salem historically tend to be represented by higher severity, less frequent fire regimes. The southern districts, particularly Medford District and Klamath Falls field office traditionally fell into more frequent, less severe fire regimes. There appears to be an emerging trend, however, to higher severity fires in the southern areas. Map 8 shows fire occurrence from 1944 through 2003.

- BLM's fire suppression in western Oregon is currently managed under a fire protection contract with the Oregon Department of Forestry to more efficiently deal with the checkerboard ownership with private lands.

- BLM's checkerboard ownership and the associated risk of damage to private lands from fires originating on BLM place limitations on BLM options for wildfire suppression. Wildfires are managed under full suppression objectives to minimize acres burned and risk to adjacent landowners.

- Mixed ownership adds to the complexity of prescribed fire operations and fuels treatments.

- Native wildlife and plants are adapted to habitats where wildfires historically occurred.

- Following major fire seasons in 1996 and 2000, The Western Governors Conference raised the issue of uncharacteristic wildfires and their impacts on local communities across the west. Three key documents were developed after the conference; the Cohesive Strategy, the National Fire Plan, and The Healthy Forest Restoration Act.

- The Healthy Forest Restoration Act came with specific mandates on managing forests to be more fire resilient, including direction to assess fire risk and hazard in a more scientific manner.

There is a corresponding increase in the development of local Community Wildland Fire Protection Plans. Watershed councils and neighborhood organizations are becoming active in fuel hazard reduction projects adjacent to BLM managed lands.

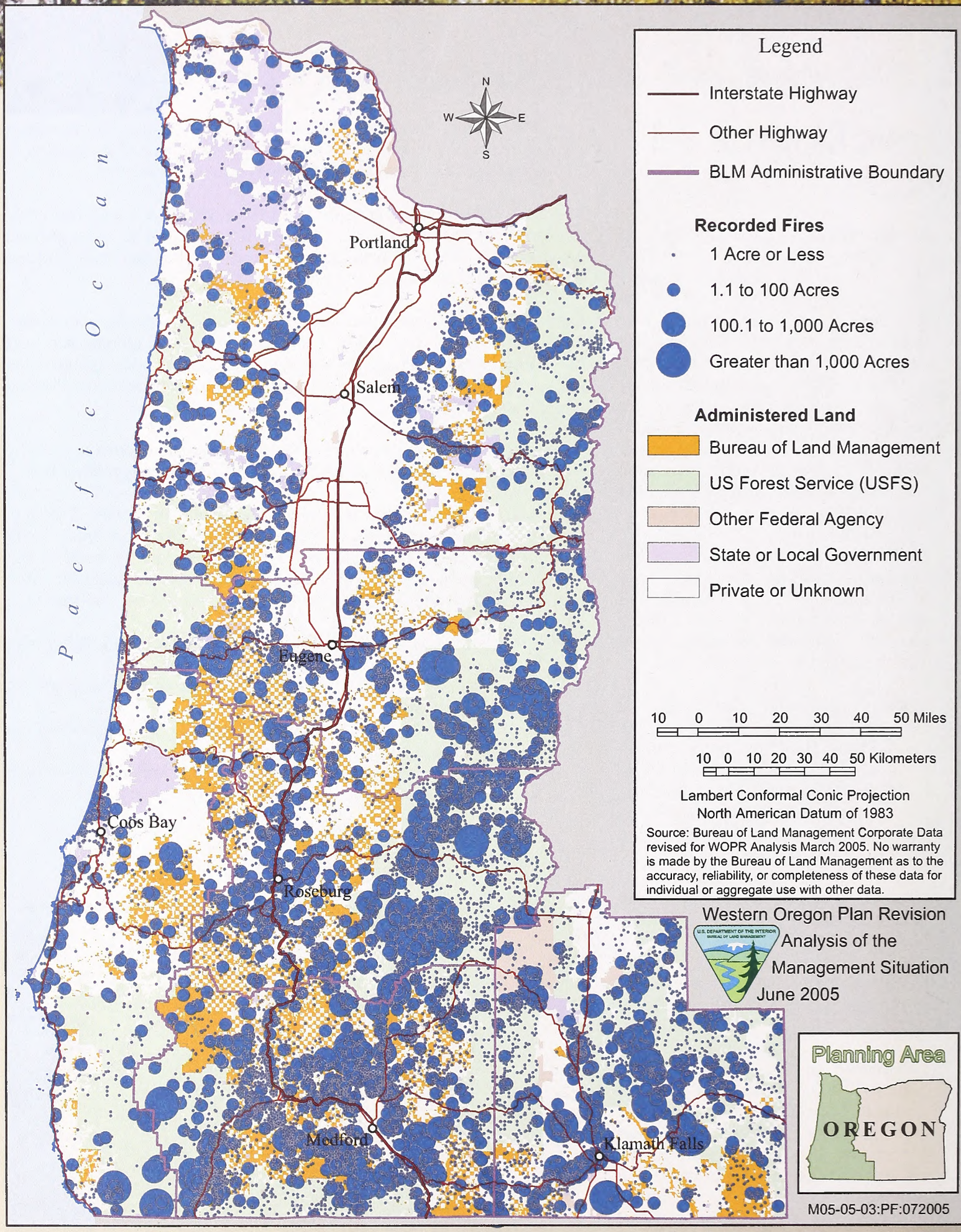
Communities at Risk were previously identified by community boundaries. These boundaries are being expanded to logical topographic and geographic breaks such as roads, ridges, and streams. As a result, much more of the BLM lands are adjacent to or within the urban wildland interface boundaries (Map 9).

The National Fire Plan has directed that every burnable acre managed by the Federal Government shall be covered by a Fire Management Plan.

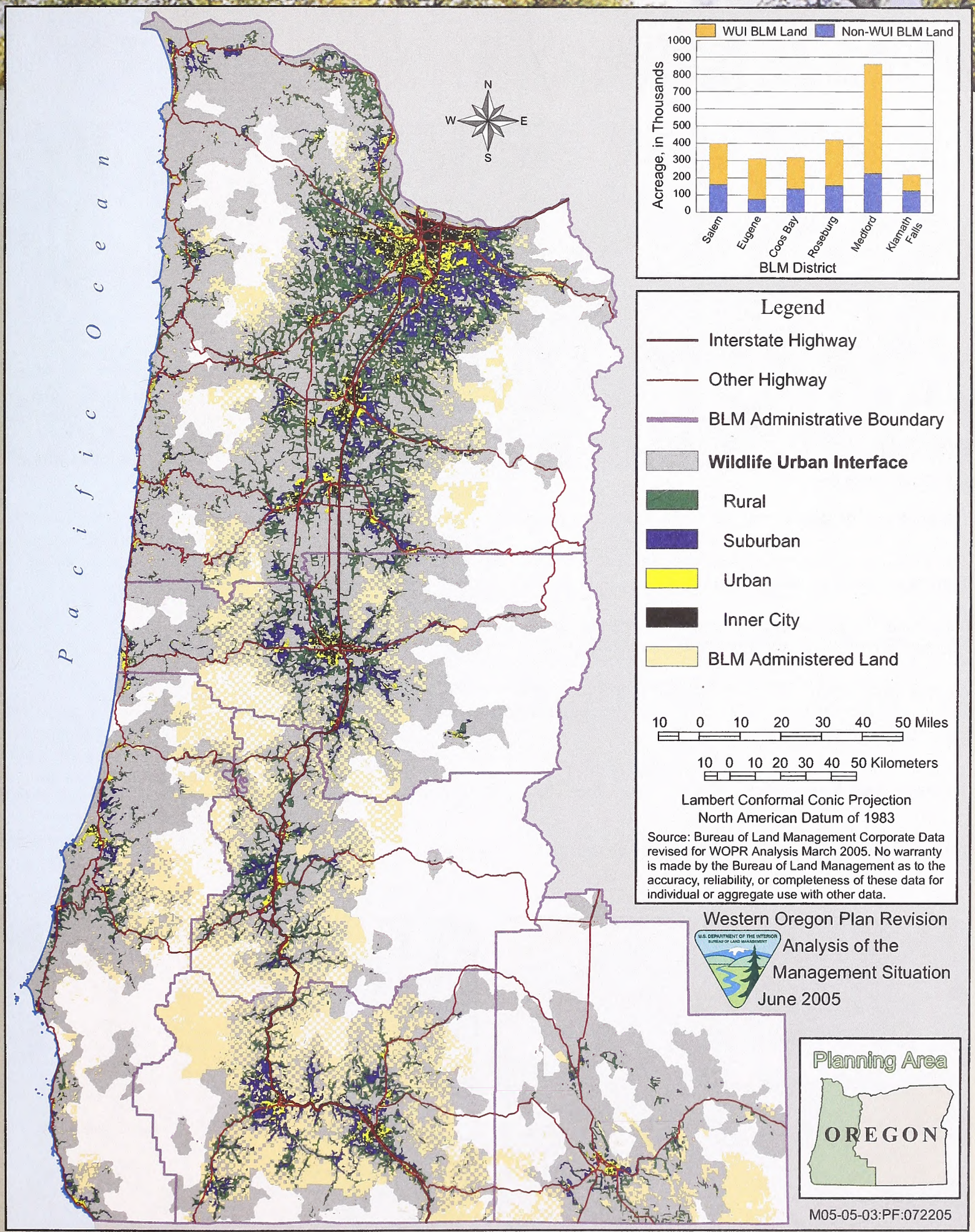
As a result of fire exclusion and harvest practices the forests of Oregon have fundamentally changed. These changes are most pronounced in the drier forest types. Fire exclusion has allowed tree stocking levels to rise dramatically. Species composition has changed; with fire exclusion there has been an increase in shade tolerant trees which are less fire resistant.

- Fire exclusion has created thickets of ladder fuels and higher than historic ground fuel loadings.
- Lack of thinning and slash treatment has created ideal conditions to create large destructive fires.
- In some cases harvest practices have removed the larger more fire resilient trees.
- Leaving areas such as riparian reserves untreated makes them susceptible to wildfires of uncharacteristically high intensity.

Increased Fuel Loading in Southern Oregon Forest.



Map 8: Western Oregon Fires by Size: 1994-2003



Map 9: Wildlife Urban Interface

Soda Creek before Thinning.

Soda Creek after Thinning.

The photographs above illustrate the use of thinning to reduce fuel loads.

The following photographs from the Squires Peak Fire illustrate how treatment influences fire behavior.

Because of the proximity of homes and private lands the appropriate fire suppression response will continue to be full suppression.

Without fuels treatments within the wildland urban interface it is likely that the hazard will continue to grow while suppression capabilities are expected to remain stable

Trends and Forecast

There is a trend of larger more severe fires emerging.

In the drier forests of southern Oregon, forests that currently would burn with high severity compose 50% of the landscape compared to 20% historically.

Climate change is an emerging issue. Global warming has the potential to significantly alter fire regimes.

In 2002 nearly one million acres burned in Oregon alone. In Colorado and Arizona over 600 homes were burned in the same year. This fire season was dramatic enough to capture the attention of the President of the United States. Midway through the 2002 fire season President George Bush visited southern Oregon to view the wildfires and their effects.

Squires Peak fire behavior without fuels treatment.

Squires Peak fire behavior within fuels treatment.

Home in Wildland Urban Interface (Squires Peak fire).

Forecast

- A negative trend towards a decrease in resiliency to fire will continue within special allocation areas such as late successional reserves and riparian reserves without active management intervention.
- Loss or degradation of desired habitat conditions for special status species, and threat to life and property are likely to continue or increase. Areas for treatment must be prioritized. Current management is doing this by funding wildland urban interface areas at a higher level than other land allocations.
- Thinning, density management and treatment of resulting slash will help reduce hazard.

The checkerboard land pattern can impede efforts at fuels treatment if cooperation is not obtained from adjacent land owners through a collaborative process.

- Communities are expanding into traditional forest and other resource lands, adding to the cost and complexity of all forms of management and risk of catastrophic fire.

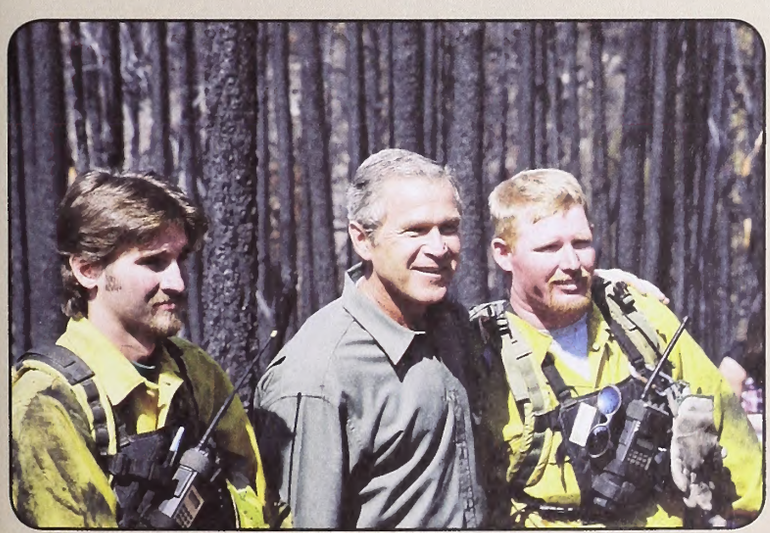
- An increase in fire occurrence and intensity has caused a substantial increase in fuels treatments within the wildland urban interface since the current RMP was adopted. (See figure 66.)

Management Opportunities

Fires within the wildland urban interface have a high safety concern both for rural residents and firefighters. Increased risks and associated costs in both ground and air operations are a concern in the wildland urban interface. There is an opportunity for increased fuel reduction and other projects to reduce risk.

Most of the management opportunities for reducing fire risk are in the Klamath physiographic province.

Commercial thinning and/or density management from below with treatment of non-commercial understory are appropriate treatments to reduce fire severity and hazard.

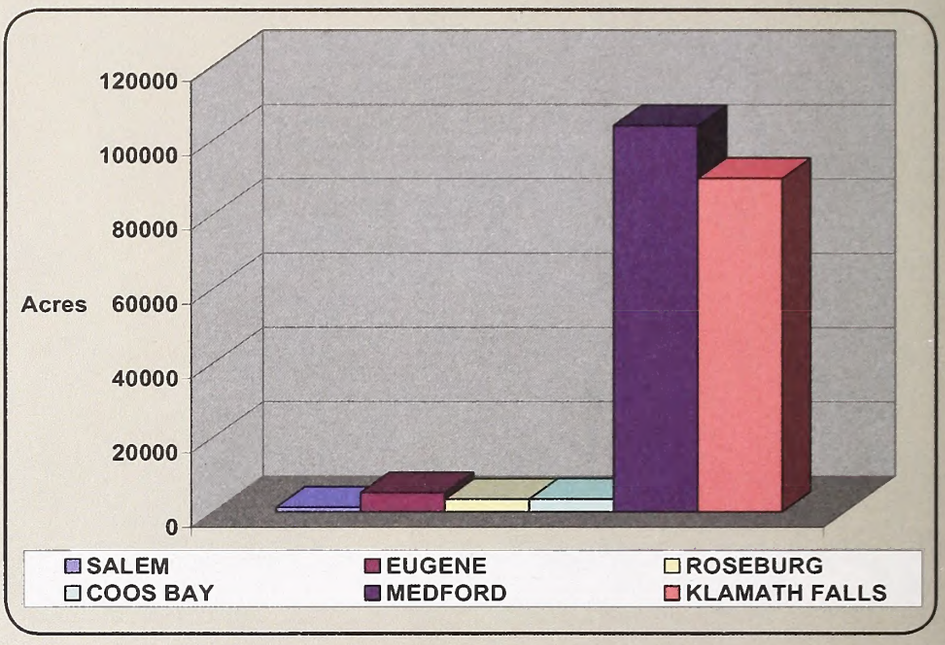


Reduction of crown density in combination with reduction of ground fuels may be the best way to reduce fire severity.

Concentrate treatments in identified high hazard and high value areas such as wildland urban interface.

Use prescribed fire where appropriate to achieve management objectives, such as maintaining special status species habitat, in areas such as oak woodlands, hardwood stands and in the dry forests of southern Oregon.

Figure 66 – Hazardous Fuels Treatment Acres by District



Air Quality

Key Points

- A reduction in prescribed fire acres in the last 10 years, due to decreased harvest, has resulted in fewer emissions than anticipated in the RMP.
- Prescribed fire is a short term contributor to air quality problems over small areas.
- Wildfires contribute large amounts of air pollutants in episodic events that often exceed air quality standards for long periods of time over vast areas.

Air Quality

Current Condition and Context

Class 1 visibility areas are congressionally mandated areas of concern. Regional haze rules for these areas are currently under review. None of the Class 1 areas are managed by the BLM; however the Class 1 areas influence BLM management. See figure 43.

Management Opportunities

Increase utilization of woody debris (chips, biomass, etc.) to maintain air quality if harvest levels and the subsequent need for prescribed burning increased.

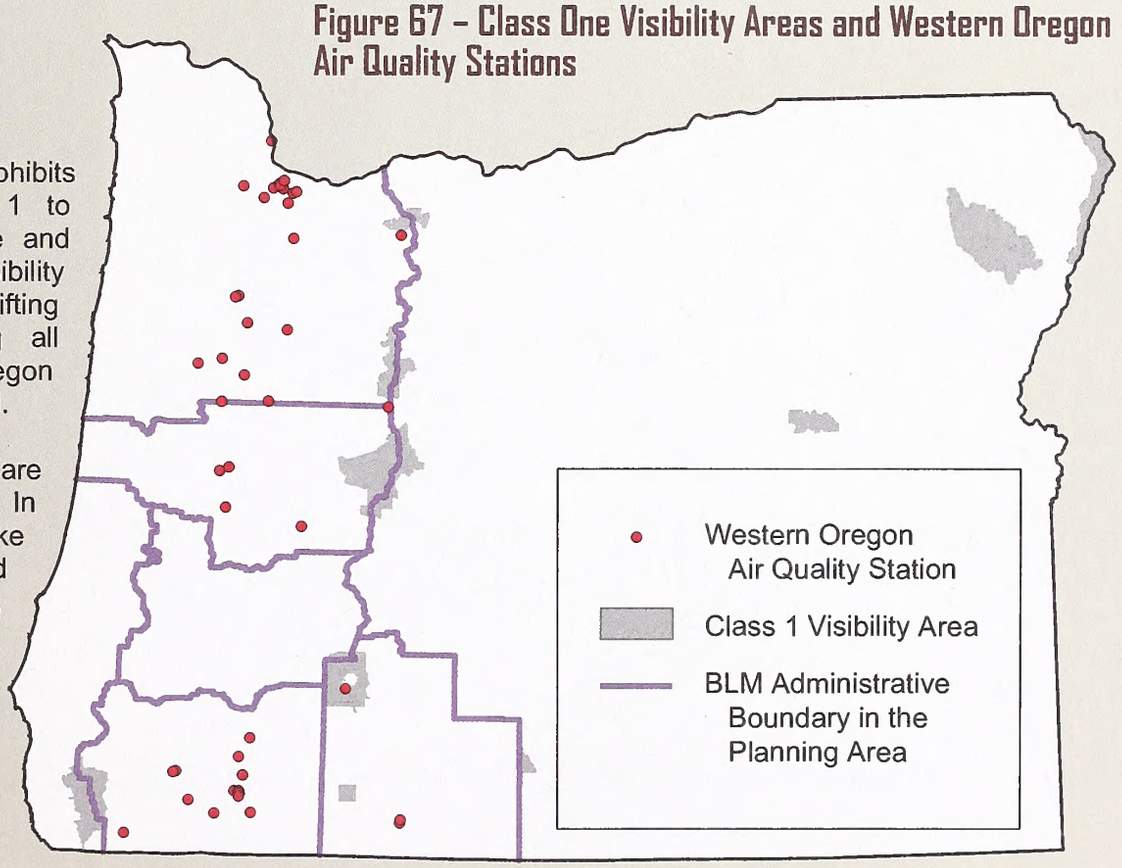
Increase non-burning treatments, such as chipping or machine mastication, to maintain air quality if harvest levels increase.

Air Quality Management – Prescribed Fire

Current management direction prohibits prescribed burning from July 1 to September 15th in the Eugene and Salem districts. The Oregon Visibility Committee has recommended lifting this prohibition and regulating all prescribed burning under the Oregon Smoke Management Plan instead.

Air quality management areas are also of concern regarding smoke. In southwestern Oregon where smoke from concentrated prescribed burning is a particular concern, the BLM and Forest Service have established additional measurement sites to provide real time air quality information. Emissions from prescribed fire are roughly half those of emissions from wildfire on an acre per acre basis. (See Figure 67)

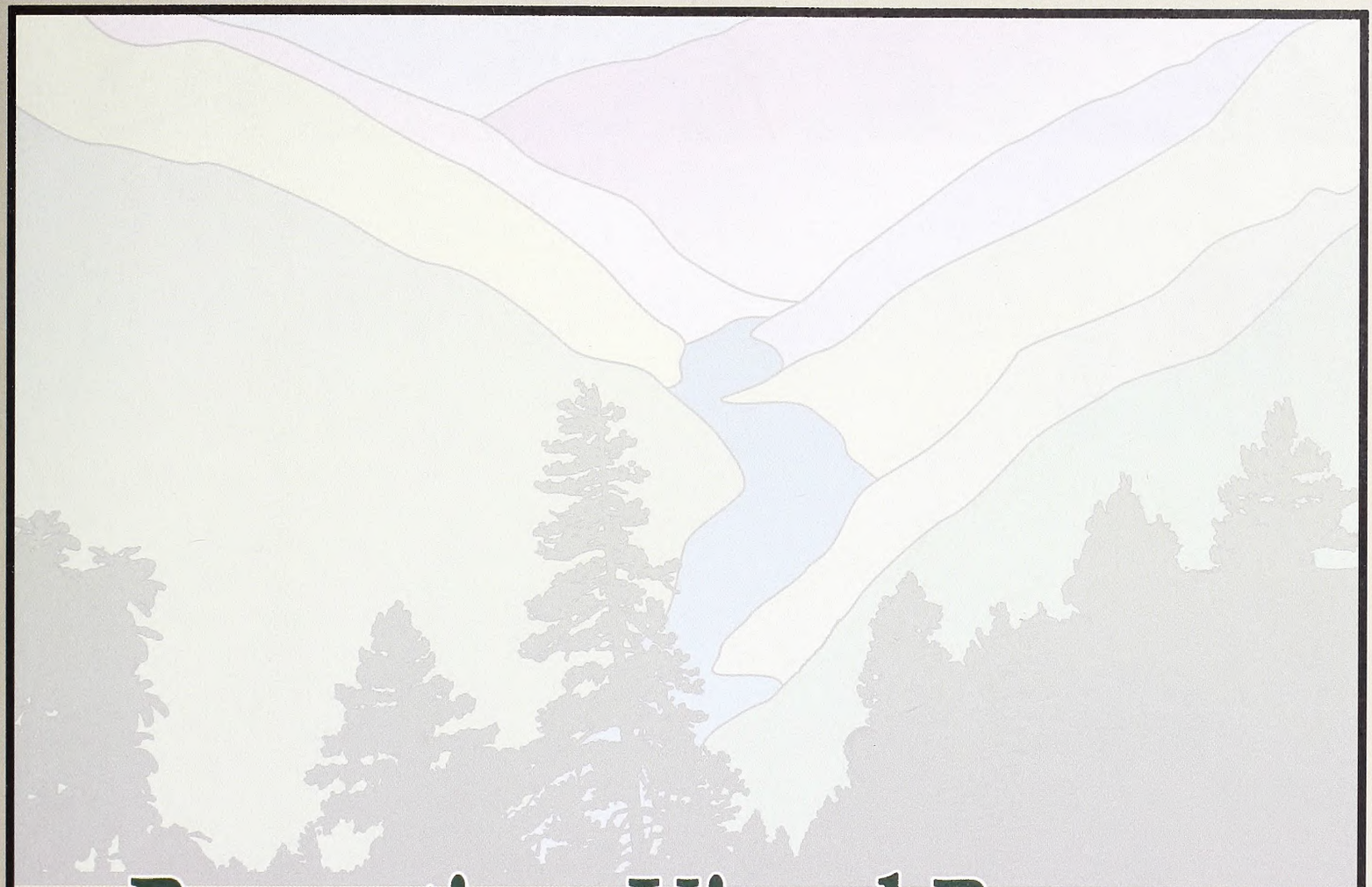
Figure 67 – Class One Visibility Areas and Western Oregon Air Quality Stations



Wildfire and Air Quality Management

Large wildfires contribute to air quality issues over large areas and can affect air quality for vast distances and long timeframes.

During the 2002 southwest Oregon wildfire season, air quality standards were exceeded in four different attainment areas almost continuously for over a month, with the particulate levels at times more the four times the acceptable levels.



Recreation, Visual Resources Management, and the National Conservation System

Key Points

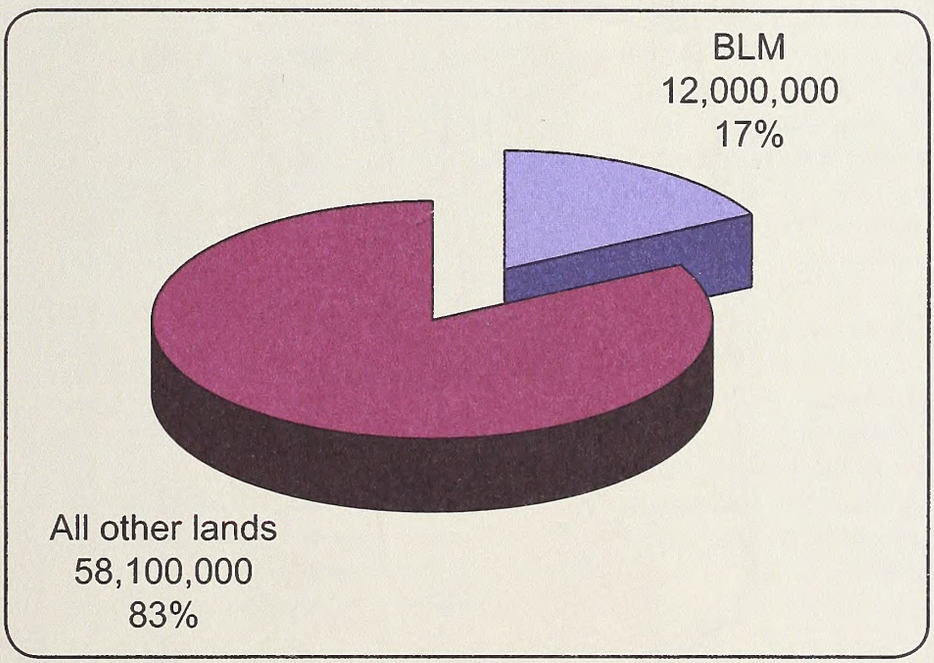
- Current RMP guidance has sufficient flexibility to adjust to projected growth in recreation demand on BLM lands throughout Western Oregon.
- Management direction for off-Highway vehicle designations on certain BLM lands in western Oregon needs to be modified to meet the challenges presented by increasing off-highway vehicle use.
- A growing portion of BLM lands in western Oregon are not accessible to the public for dispersed outdoor recreation due to an emerging trend for adjacent timber companies to gate their roads.

Recreation, Visual Resource Management, and the National Landscape Conservation System

Current Condition and Context

BLM lands throughout western Oregon provide a diversity of recreational settings for the public to enjoy. These settings span across the Coast Range, Cascades, and Klamath-Siskiyou mountains, providing a variety of high-quality outdoor experiences. (Refer to Map 10.) An estimated 17 percent of all outdoor recreation participation in western Oregon occurs on BLM lands.[1] For comparison purposes, BLM lands account for 12 percent of all lands in the region (Figure 68).

Figure 68 – Western Oregon Outdoor Recreation Demand



Recreation Settings

The land-use designations described below were established in the resource management plans. Continued management and on-going improvements to these areas are keeping BLM in pace with growing recreation demands in western Oregon.

Special Recreation Management Areas

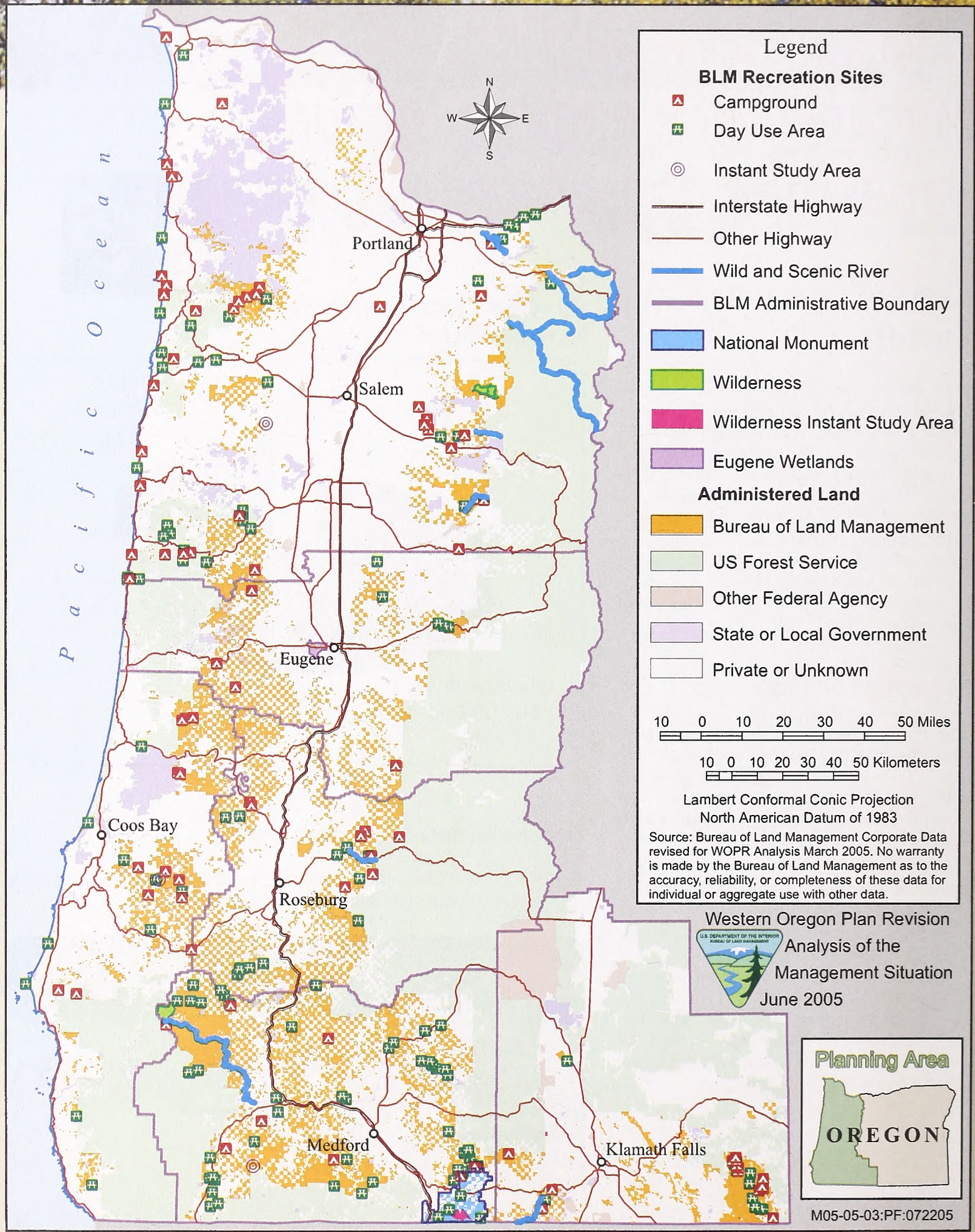
- Provide specific recreation activity and experience opportunities.
- Usually require a high level of investment and/or management.
- BLM manages 25 special recreation management areas that include 87 recreation sites in western Oregon (4 percent of BLM lands in the planning area).

Extensive Recreation Management Areas

- Include all BLM lands outside special recreation management areas where dispersed recreation use occurs.

Example of intensive recreation at the Loon Lake Campground, Coos Bay District.

[1]Outdoor recreation demand was estimated using visitor use data generated from BLM's Recreation Management Information System (RMIS 2004) and survey data collected for Oregon's Statewide Comprehensive Outdoor Recreation Plan (SCORP 2003). RMIS estimates are for BLM lands only, whereas SCORP estimates apply to all lands in the region. 'Participation' was used for this comparison, which is defined as each time an individual engages in a single recreation activity. Other visitor use trends described throughout this section of the AMS were estimated using either RMIS or SCORP data.



Map 10: Distribution of BLM Recreation Sites in Western Oregon

- Include developed and primitive recreation sites that provide only minimal facilities to the public.
- BLM manages 16 extensive recreation management areas that include 47 recreation sites (96 percent of BLM lands in the region).

Back Country Byways

- Corridors with high scenic, historic, archeological, or other public-interest values.
- Primarily located on low-speed, gravel or paved roads designed for passenger vehicles that traverse the region's backcountry.
- BLM manages nine Back Country Byways in western Oregon that total 233 miles.
- There has been a 22 percent increase in public participation in the "Driving for Pleasure" recreation activity in western Oregon from 1987 to 2002.

Trails

- BLM manages 62 trail systems that total over 350 miles in western Oregon.
- There has been a 27 percent increase in non-motorized trail use and a 9 percent increase in motorized use from 1999 to 2004.

Off-Highway Vehicle Designations

- All public lands are designated as open, limited, or closed to off-highway vehicles. These designations are described below in context with western Oregon BLM lands (Figure 69).
- There has been a 32 percent increase in all terrain vehicle recreation activity in western Oregon from 1987 to 2002.
- The level of growth in demand for off-highway vehicle use has exceeded what was projected on certain BLM lands in the region.

Open Areas

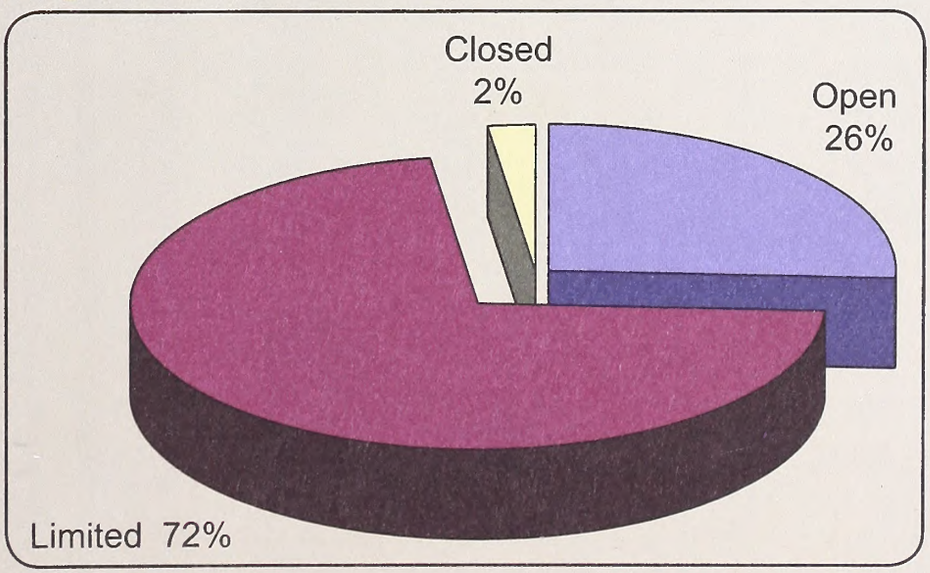
- Areas where all types of vehicle use are permitted at all times, anywhere in the area subject to certain operating regulations and vehicle standards.
- Large tracks of land were designated as open in the Medford and Salem districts and Klamath Falls field office.
- Previously, large tracks of open land were not seen as an issue because off-highway vehicle use was low, there were no compelling resource protection needs or user conflicts, or there were no public safety concerns to warrant limiting cross-country travel.
- Currently, increasing levels of off-highway vehicle use in portions of these open areas have resulted in localized resource degradation, social conflicts among other recreation users and neighboring landowners, and safety concerns resulting from a lack of suitable off-highway vehicle opportunities for the public.

Example of dispersed recreation on the North Umpqua Trail, Roseburg District.

Limited Areas

- Areas restricted at certain times, in certain areas, and/or to certain vehicular use.

Figure 69 – Percentage of Western Oregon BLM Lands by OHV Designation



- The Eugene, Roseburg, and Salem districts and the Klamath Falls field office designated a majority of their 'limited' areas to existing roads and trails. Since comprehensive route inventories were not completed at the time these designations were made, it is difficult to determine if new routes created by off-highway vehicle users actually 'existed' at the time of designation. Designating off-highway vehicle use to existing roads and trails also limits BLM's ability to select which of these routes are in fact suitable for off-highway vehicle use.
- The Coos Bay and Medford districts designated all limited areas to designated roads and trails allowing for the designation of specific off-highway vehicle routes.

Closed Areas

- Areas where off-highway vehicle use is prohibited to protect resources, ensure visitor safety, or reduce user conflicts.

Visual Resource Management

Visual Resource Management designations in the existing RMPs are adequate with the exception of needing to incorporate new national policy interpretation (IM No. 2000-096), which requires Wilderness Study Areas be managed under Visual Resource Management Class I rather than Class II. This calls for minor re-classification of Visual Resource Management designations for existing Wilderness Study Areas in the planning area. (See Figure 70.)

National Landscape Conservation System

BLM's National Landscape Conservation System includes special congressional or presidential land-use designations as described below. Three areas have been either newly established or incorporated into the National Landscape Conservation System since the completion of the western Oregon resource management plans:

- Cascade-Siskiyou National Monument (established 2000)
- Elkhorn Creek Wild and Scenic River (established 1996)
- Yaquina Head Outstanding Natural Area (incorporated 2002)

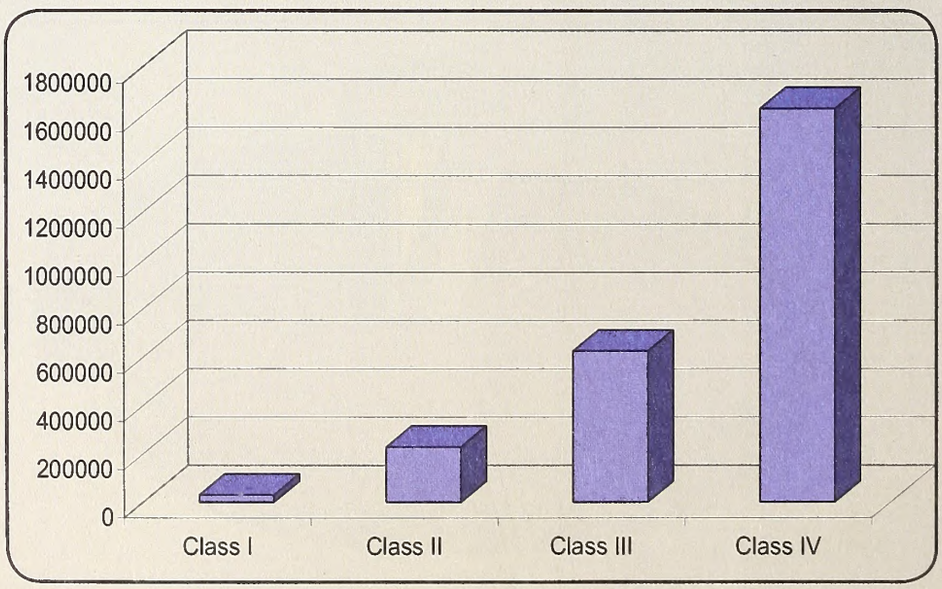
Class I – Preserve the existing character of the landscape.

Class II – Allow for low level of change that retains the existing character of the landscape.

Class III – Allow for moderate level of change that partially retains the existing character of the landscape.

Class IV – Allow for major modification of the existing character of the landscape.

Figure 70 – Total BLM Acres by Visual Resource Management Classification



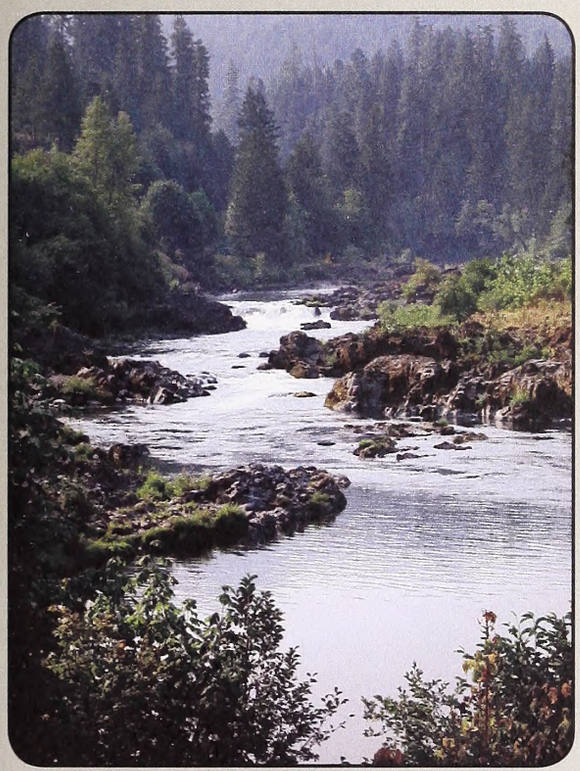
Cascade-Siskiyou National Monument – (53,000 Acres)

Nation's first monument designated in recognition of an area's biological diversity located on the Medford district.

Wild and Scenic Rivers – (100 miles)

BLM manages portions of eight Wild and Scenic Rivers in western Oregon:

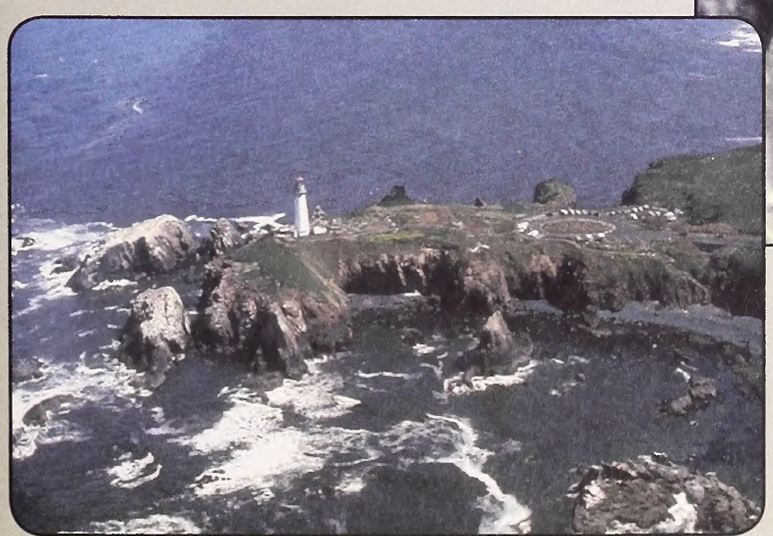
- North Umpqua (Roseburg district)
- Rogue (Medford District)
- Upper Klamath (Klamath Falls field office)
- Clackamas, Salmon, and Sandy Rivers; and Elkhorn and Quartville Creeks (Salem district)



North Umpqua Wild and Scenic River, Roseburg District.

Yaquina Head Outstanding Natural Area – (100 acres)

- Nation's only congressionally-designated Outstanding Natural Area.
- One of the most accessible wildlife and ocean viewing locations on the Pacific coast.
- Includes one of BLM's major interpretive centers in the nation, and Oregon's tallest and second oldest continuously operating lighthouse.
- Located on the Salem district.



Yaquina Head Outstanding Natural Area, Salem District.

Pacific Crest National Scenic Trail – (41 miles)

- Medford District and Klamath Falls field office manage portions of the Pacific Crest National Scenic Trail.

Wilderness Areas – (14,400 acres)

BLM manages the Table Rock and the Wild Rogue Wilderness Areas in the Salem and Medford districts respectively.

Wilderness Study Areas – (7,300 acres)[2]

BLM manages five Wilderness Study Areas in western Oregon:

- Cherry Creek (Coos Bay district)
- Little Sink (Salem district)
- Mountain Lakes (Klamath Falls field office)
- Brewer Spruce and Soda Mountain (Medford district)

Trends and Forecast

Visitor Trends

From 1999 to 2004, there was an 18 percent increase in overall outdoor recreation participation on BLM lands in western Oregon. A majority of

Watchable Wildlife sote at New River, Coos Bay District.

[2]Cherry Creek, Little Sink, and Brewer Spruce are actually designated as wilderness Instant Study Areas. These areas were recommended to Congress as not suitable for wilderness designation because they do not meet the 5,000-acre minimum size requirement. However, BLM is required to manage them as wilderness under the Wilderness Interim Management Policy H-8550-1 unless Congress releases them from wilderness consideration via legislation. Furthermore, a recent policy mandate regarding the prohibition on designating new wilderness study areas has been issued in the form of Instruction Memo No. 2003-274-275. Inventory and protection of newly identified wilderness characteristics via the Land Use Planning process can still occur under certain circumstances. However, a recent informal Regional Office of the Solicitor review confirmed the current policy interpretation regarding the prohibition of wilderness reviews on portions of O&C lands that are specifically managed for permanent forest production.

this increase in demand has occurred at recreation sites located within close driving distance of major population centers throughout the region. As populations continue to grow throughout these urban interface areas, outdoor recreation demand is expected to increase.

The most noteworthy change in recreation demand in western Oregon since the completion of the last RMPs is in the Interpretation, Education, and Nature Study category. There has been a 115 percent increase in this activity on all public and private lands in western Oregon from 1987 to 2002. On BLM lands alone, this type of recreation has increased 42 percent from 1999 to 2004. Not only has demand for this activity increased, but it now makes up the largest percentage (30%) of participation on BLM lands compared to all other recreational activities.

Management Opportunities

Adjustments to current off-highway vehicle designations for many of the districts are needed to establish consistency with BLM's new National Management Strategy for Motorized off-highway vehicle use on Public Lands (2001).

The six BLM districts in western Oregon approached off-highway vehicle management differently in the existing RMPs. The plan revisions provide an opportunity to review the need for consistency among districts with emphasis on the new national policy.

Only the Roseburg district has completed a district-wide off-highway vehicle implementation plan as required by the existing RMPs. The plan revision provides an opportunity to review the requirements for off-highway vehicle plans.

Off-highway vehicle area designations must be completed as part of the RMP process. The RMP revision provides BLM with an opportunity to re-designate some off-highway vehicle areas in order to improve off-highway vehicle management across the region. Considerations for improving off-highway vehicle management include, but are not limited to:

- Public safety and recreation demand (e.g. proving more suitable off-highway vehicle opportunities for the public).
- Threatened and endangered plant, wildlife, and fish species and their associated habitats.
- Land-use designations (e.g., special areas, riparian and late-successional reserves)
- Terrain (e.g., steep forested landscapes, sand dunes, wetlands).
- Checkerboard ownership configuration juxtaposed with private lands.
- Road and trail networks.
- Invasive plants.
- Cultural resources.

The current RMP guidance has sufficient flexibility to keep pace with projected increases in outdoor recreation demand across western Oregon. However, minor adjustments or refinements are needed to fit the current recreation management situation. See Table 16 for these options for change.

Table 16 Potential Refinement of Current Management Direction for Recreation.

Planning decision	Is decision responsive to current issues?	Remarks (rationale)	Options for change
Visual Resource Management Class designations	Yes	New national policy interpretation requires Wilderness Study Areas be managed as Class I rather than Class II.	Re-classify Wilderness Study Areas as Class I for consistency with new policy interpretation.
Special Recreation Management Area designations	Yes	Some areas within Extensive Recreation Management Area designations require higher levels of investment or management presence to keep pace with localized changes in recreation demand. In contrast, some Special Recreation Management Areas are not necessary due to a lack of recreation need from the public.	Potential opportunities to modify or adjust Special Recreation Management Area designations to improve recreation management. Establish goals and objectives for the management of Special Recreation Management Areas.
Extensive Recreation Management Area designations	Yes	Extensive Recreation Management designations follow resource area boundaries – some resource area have merged since the adoption of the RMPs.	Re-designate Extensive Recreation Management Areas to match new Resource Area boundaries.
Special Recreation Permits	Yes	Existing RMPs do not adequately address special recreation permits. New national policy directs BLM to appropriately consider special recreation permits within the RMP process.	Address special recreation permit as part of the RMP revisions to ensure consistency with new national policy.
Other recreation-related designations	Yes	Since the last RMPs, proposed Back Country Byways and trails have been established.	Update new designations into the RMP revisions – change language in RMPs from 'proposed' to 'existing.'
Recreation Goals and Objectives	Yes	'BLM's Priorities for Recreation and Visitor Services' (2003) clearly defines goals and objectives for recreation and visitor services.	Incorporate BLM's new national goals and objectives to ensure consistency.
National Landscape Conservation System designations	Yes	A National Monument, a Wild and Scenic River, and an Outstanding Natural Area have been designated / incorporated into the National Landscape Conservation System since the adoption of the RMPs.	Incorporate new designations and associated management plans into the RMP revisions.
Land tenure adjustments	Yes	Land acquisitions through direct purchase or exchange have occurred since the last RMPs.	Recreation-related planning decisions should be applied to newly acquired lands (i.e., visual resource management, off-highway vehicle designations, activity plans for special areas, etc.).
Off-highway vehicle area designations	No	BLM's 'National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands' (2001) provides new policy direction for off-highway vehicle management.	Examine existing land-use allocations to ensure consistency with BLM's new national strategy.
Riparian Reserve – Standard and Guidelines	No	Recommends removing recreation sites from Riparian Reserves that prevent the attainment of Aquatic Conservation Strategy objectives. This is not realistic for most Districts since a majority of recreation sites are located near streams.	Re-define Standard and Guidelines with Best Management Practices that minimize disturbance to aquatic habitat.
Reciprocal Right-of-Way Agreements	No	BLM's checkerboard ownership pattern juxtaposed with corporately-owned forest lands limits public access for recreation opportunities to a portion of BLM lands in the region. Most timber companies are unwilling to include public access within the scope of their right-away agreements with the BLM. In fact, there is an emerging trend for timber companies to gate their private roads that once provided public access to BLM lands.	Evaluate the extent of public access limitations to BLM lands across western Oregon. Examine criteria and management options for improving or limiting public access.

Soils

Key Points

- Best Management Practices (BMPs) should be reviewed for current relevance and clarification given the new information, harvest systems, and equipment.
- The use of Timber Production Capability Classification reforestation classifications for land use decisions other than reforestation needs to be clarified in order to avoid confusion between soil characteristics and reforestation problems.
- Opportunities may exist for the management of unstable soils in terms of the introduction of sediment and wood into sediment and wood starved stream channels.

Soils

Current Condition and Context

Previous soil descriptions collected by the National Resources Conservation Service and their general soil interpretations are sufficient for this planning effort. However, further local refinement of the location of unstable soils in the planning area may be desirable.

The Timber Production Capability Classification inventories for some districts have changed or will change the classification of some lands since the last RMP.

Growth loss is only one criterion for determining effects of management actions on the soil resource. There is an emphasis in some of the current RMPs to use growth loss as a single measure of soil productivity.

The capacity of soils functions to occur has been defined as soil quality. As soil quality changes (physical, chemical, and biological indicators) so does the capacity of a soil to function in the ecosystem.

Current Best Management Practices do not reflect new ground based timber harvest methods and strategies as well as new road building and maintenance practices.

The Timber Production Capability Classification inventory was originally designed as a single use interpretation for timber production based on the soil and other site specific features. Its sole purpose was to be used as a guide to determine the capability of a site to support timber production and produce forest products on a sustained yield basis. The various classifications depict the difficulty expected for reforestation and the potential for lowering productivity on a site. Timber Production Capability Classification classifications like "fragile", "non-suitable", "problem" were descriptive of reforestation difficulties and may not be applicable to other uses.

The Coast Range mountains and to a lesser degree the Cascades mountaions have soils and geology that are unstable. Landslides and debris flows can be common due to natural geologic processes but management action can exacerbate their occurrence.

Management Opportunities

Develop soil monitoring questions that are easily and economically monitored by soil scientists to determine if soil functions are being maintained.

Best Management Practices designed to reduce road sediment need to be reviewed for effectiveness particularly for areas that have chronic problems.

Edit Best Management Practices to resolve any ambiguities, inconsistencies, or confusion in their implementation.

Place Best Management Practices that are routinely applied to projects into the management direction.

The terminology used for the Timber Production Capability Classification can be misleading and were not intended to be used for all management activities. Clearly define the purpose and the interpretation of the Timber Production Capability Classification.

Livestock Grazing

Key Points

- Livestock grazing in the planning area is administered only by the Medford and Coos Bay districts and the Klamath Falls field office.
- The level, duration and timing of livestock grazing within the planning area are permitted or leased below levels anticipated in the resource management plans.

Livestock Grazing

Current Condition and Context

- The Medford and Coos Bay districts and the Klamath Falls field office administer livestock grazing on 560,011 acres representing 22 percent of the planning area (Table 17).

- This level of grazing represents 16 percent of grazing (acres) that occurs on land covered by the Northwest Forest Plan.

- Existing grazing leases/permits authorize a total of 26,840 active Animal Unit Months during the grazing season.

- The level, duration, and timing of livestock grazing use within the planning area continue to be permitted/leased at or below plan levels. The reasons for this level vary by individual grazing allotments or leases and include annual fluctuations of individual livestock operations, relinquishment by operators, cancellation of grazing leases or permits due to nonuse or non-compliance, and lack of interest.

- All or portions of 9 grazing allotments in the Medford District are located within the Cascade-Siskiyou National Monument. The Klamath Falls field office administers 2 of these allotments. (See Map 11, Location of Grazing Allotments.)

Figure 71 displays the change in the number of active allotments between 1996 and 2004. The number of vacant allotments and leases has increased from 17 (all in the Medford district) in 1996 to 53 (43 in the Medford District, 2 in the Coos Bay district, 8 in the Klamath Falls field office) in 2004. A vacant allotment is an allotment that does not currently have an active permit or lease. Some allotments have been vacant since the 1970s. The reasons for the increase in vacant allotments include:

- Relinquishment by operators.
- Cancellation due to nonuse or non-compliance.
- Lack of interest.
- Intermingled private land making it difficult to graze within an allotment.
- Conflicts with other users of public land.
- Lack of fencing to control livestock on public land.

The increase in total active Animal Unit Months (Figure 72) for the Klamath Falls Field Office between 1996 and 2004 is a result of a combination of factors including:

- Land sales, acquisitions and exchanges.
- Changes based on Rangeland Health Assessments and/or rangeland survey results.
- Adjustments to correct past allocation errors.
- New information.

Figure 71 – Change in Active Allotments

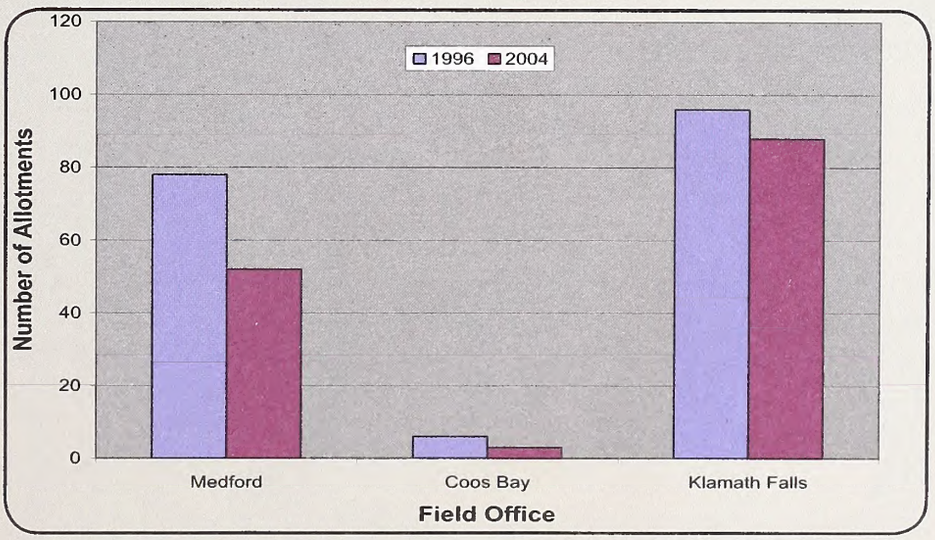
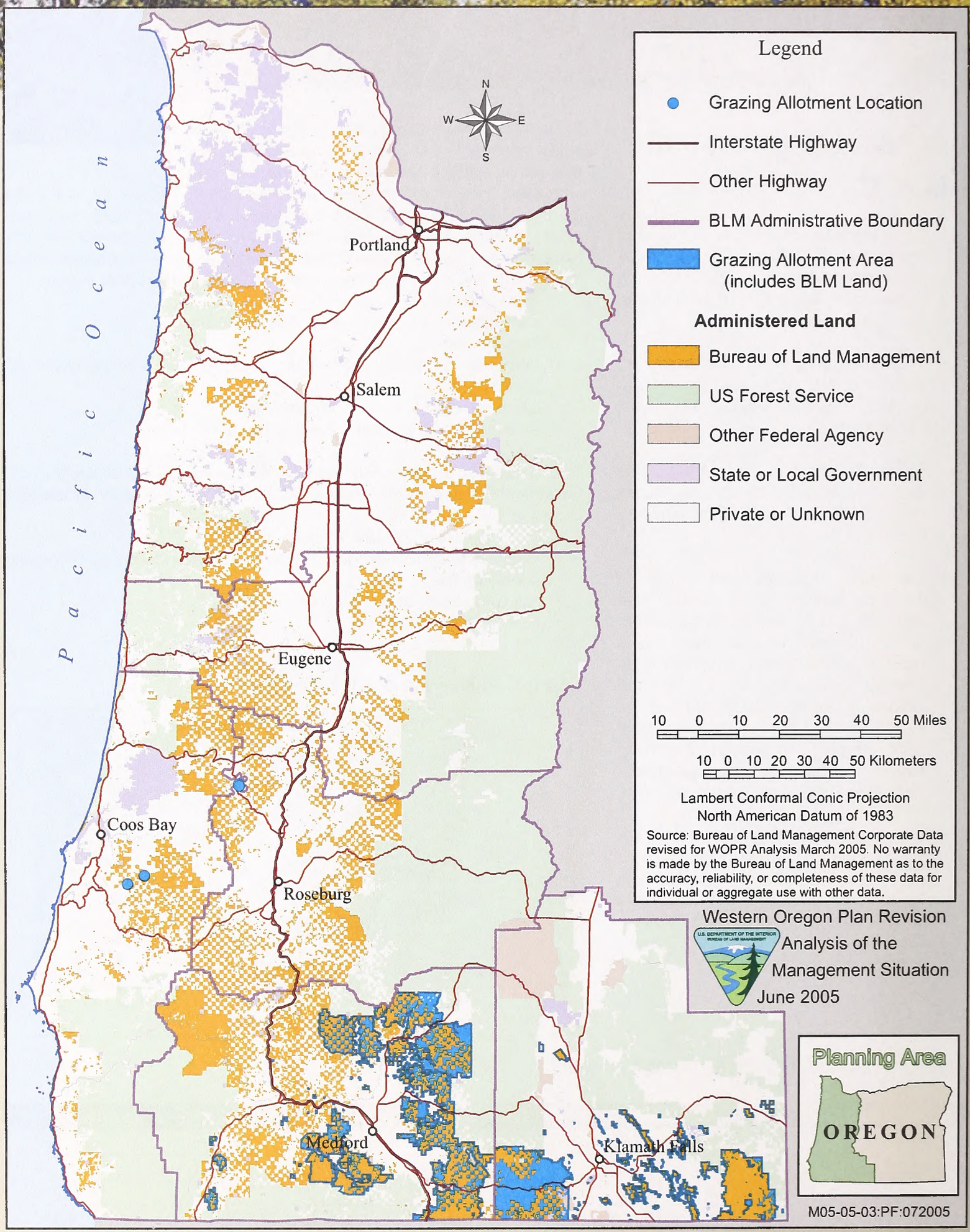


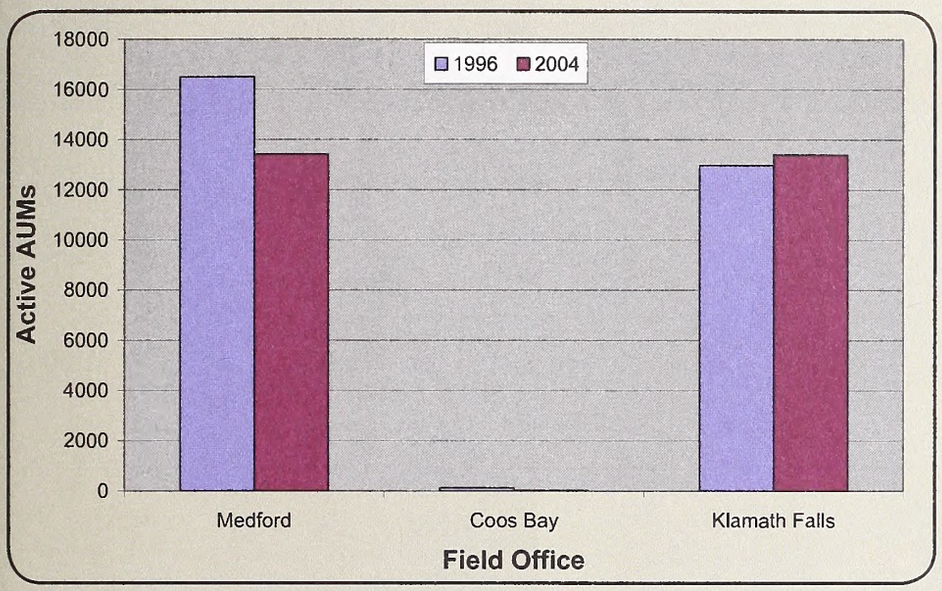
Table 17 – Livestock Grazing Statistics by District

Total Number of:	Medford	Coos Bay	Klamath Falls	Total
Allotments	95	0	96	191
Leases	0	4	0	4
Public Land Acres	352,312	16	207,682	560,010
Active Animal Unit Month	13,416	23	13,401	26,840
Permittees/Lessees	59	3	92	154



Map 11: Location of Grazing Allotments

Figure 72 – Change in Active Animal Unit Months (AUMs)



Range Improvements

Range improvement projects are being planned and implemented as described in the Medford and Klamath Falls Resource Management Plans. Range improvements are used to:

- Improve livestock distribution.
- Provide livestock forage.
- Restore degraded areas.
- Protect sensitive sites.
- Improve wildlife habitat.
- Facilitate intensive management of livestock through implementation of grazing systems.

Table 18 shows the types of range improvements completed from 1996 through 2004.

Rangeland Health Assessments

The 1997 Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington were developed in consultation with Resource Advisory Councils, Provincial Advisory Committees, tribes and others.

Current management direction is to complete rangeland health assessments on all active and vacant allotments.

A total of 95 allotments or 49 percent of the number of allotments and leases and 64 percent of the total number of public land acres within the planning area have been assessed. Completion of rangeland health assessments is on schedule to be completed by 2009.

Table 19 shows that 63 percent of the total acres assessed are meeting rangeland health standards or making significant progress towards meeting the standards.

Management opportunities to achieve desired conditions may be limited in those areas where rangelands may not have the capability to meet rangeland health standards or make significant progress towards meeting the standards due to causes other than livestock.

As a result of past management activities, an area that has been converted from a perennial grass/forbs understory to an invasive plant understory (i.e. medusahead, dogtail, or bulbous bluegrass) is an example of where management opportunities may be limited.

The photographs below show an example of riparian recovery in the Klamath Falls field office following changes in grazing management. The riparian recovery of Ben Hall Creek in the Dry Prairie Allotment between 1992 and 2003 resulted following a change from 2 months of summer grazing to the creation of a riparian pasture that is grazed once every three years. Ben Hall Creek is habitat for the endangered shortnose sucker.

Management Opportunities

Current management direction is to complete rangeland health assessments on all active and vacant allotments. The number of active allotments has decreased between 1996 and 2004. The RMP revision can be used as

Table 18 – Range Improvements Constructed 1996-2004

Type of Project	Medford	Coos Bay	Klamath Falls	Total
Livestock Fences Constructed or Maintained (units/ miles)	75 (39 miles)	0	30 (55 miles)	105 (94 miles)
Reservoirs or Springs Constructed/ Developed (units)	6	0	3	9
Vegetation Control (acres)[1]	0	0	14,386	14,386

[1]Juniper Control-Mechanical and Hand Treatments

Table 19 – Rangeland Health Standards Assessment Results

Rangeland Standards Category	Medford		Coos Bay		Klamath Falls		Total	
	Allotments	Acres	Allotments	Acres	Allotments	Acres	Allotments	Acres
Meeting or Making Significant Progress Toward Meeting All Standards	33	96,252	4	16	31	93,336	68	189,604
Not Meeting or Making Significant Progress but Appropriate Action Has Been Taken to Ensure Significant Progress (Livestock is a factor)	0	0	0	0	4	35,509	4	35,509
Not Meeting or Making Significant Progress Toward Meeting Standards Due to Causes Other Than Livestock Grazing	17	97,273	0	0	6	34,697	23	131,970
Total Assessed	50	193,525	4	16	41	163,542	95	357,083
Total District Allotments/ Acres	95	352,312	4	16	96	207,682	195	560,010
Total Not Assessed	45	158,787	0	0	55	44,140	100	202,927

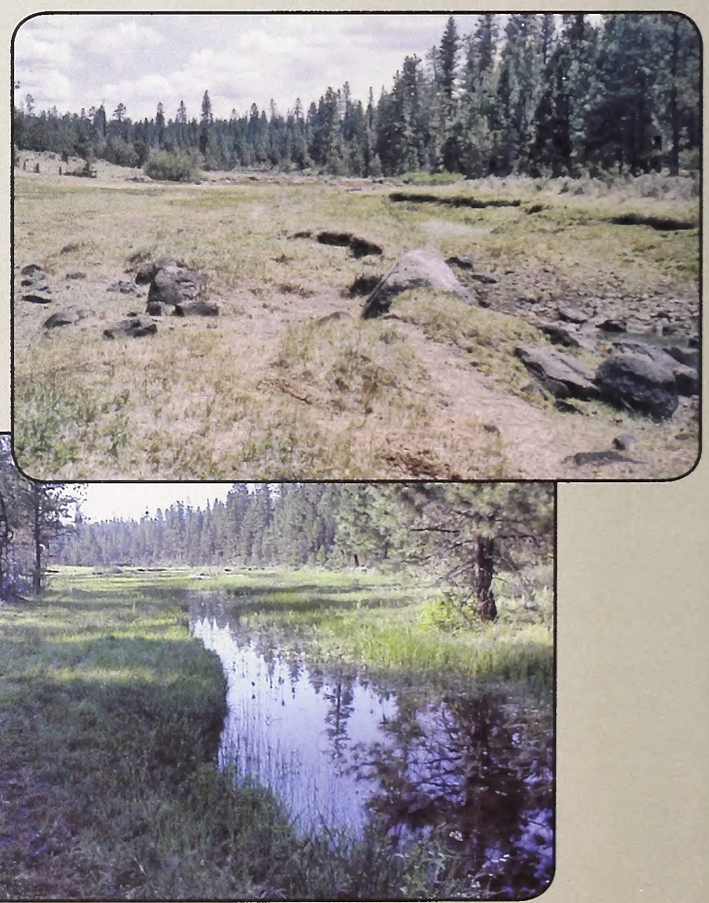
The category *Rangelands Not Meeting All Standards or Making Significant Progress Toward Meeting the Standard-No Appropriate Action has been Taken to ensure Significant Progress Toward Meeting the Standard (Livestock is a Significant Factor)* is not included in the above table as the numbers would all be zero.

an opportunity to provide a strategy that improves the efficiency of administration for active and vacant allotments/leases.

A strategy could include identifying lands available or not available for livestock grazing that considers the following factors:

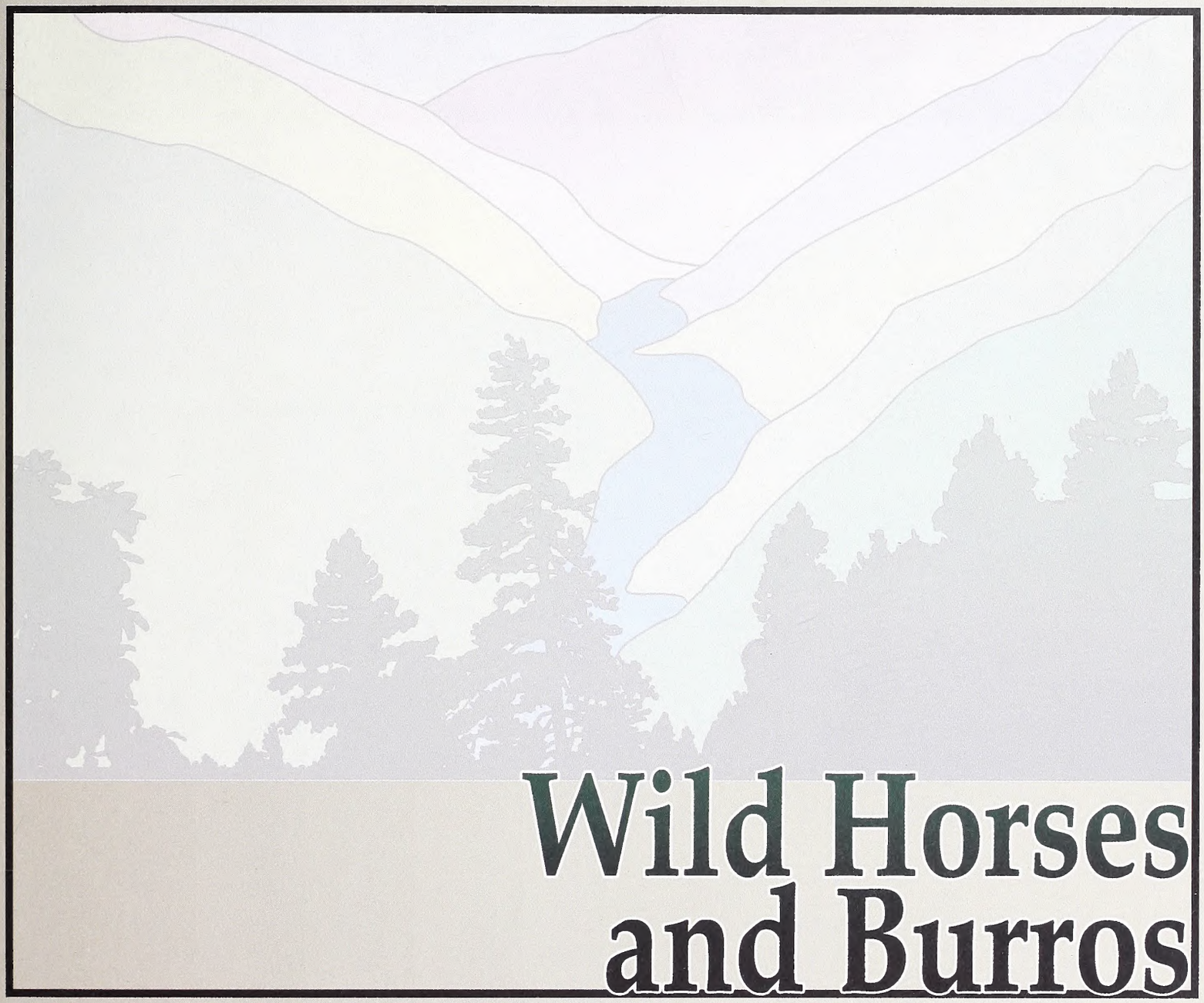
- Acreage or number of animal unit months threshold for lease administration.
- If a grazing lease or permit has been voluntarily relinquished or if there are outstanding requests to voluntarily relinquish the grazing lease or permit.
- Length of time since an allotment has been vacant.

Management opportunities to achieve desired conditions may be limited in those areas where rangelands may not have the capability to meet rangeland health standards or make significant progress towards meeting the standards due to causes other than livestock e.g. an area that has been converted from a perennial grass/forbs understory to an invasive plant understory (i.e. medusahead, dogtail, or bulbous bluegrass).



upper photo, Ben Hall Creek, June 25, 1992.

lower, photoBen Hall Creek, June 18, 2003



Wild Horses and Burros

Key Points

- Current management direction is adequate for the management of grazing allotments and the Pokegama Herd Management Area.

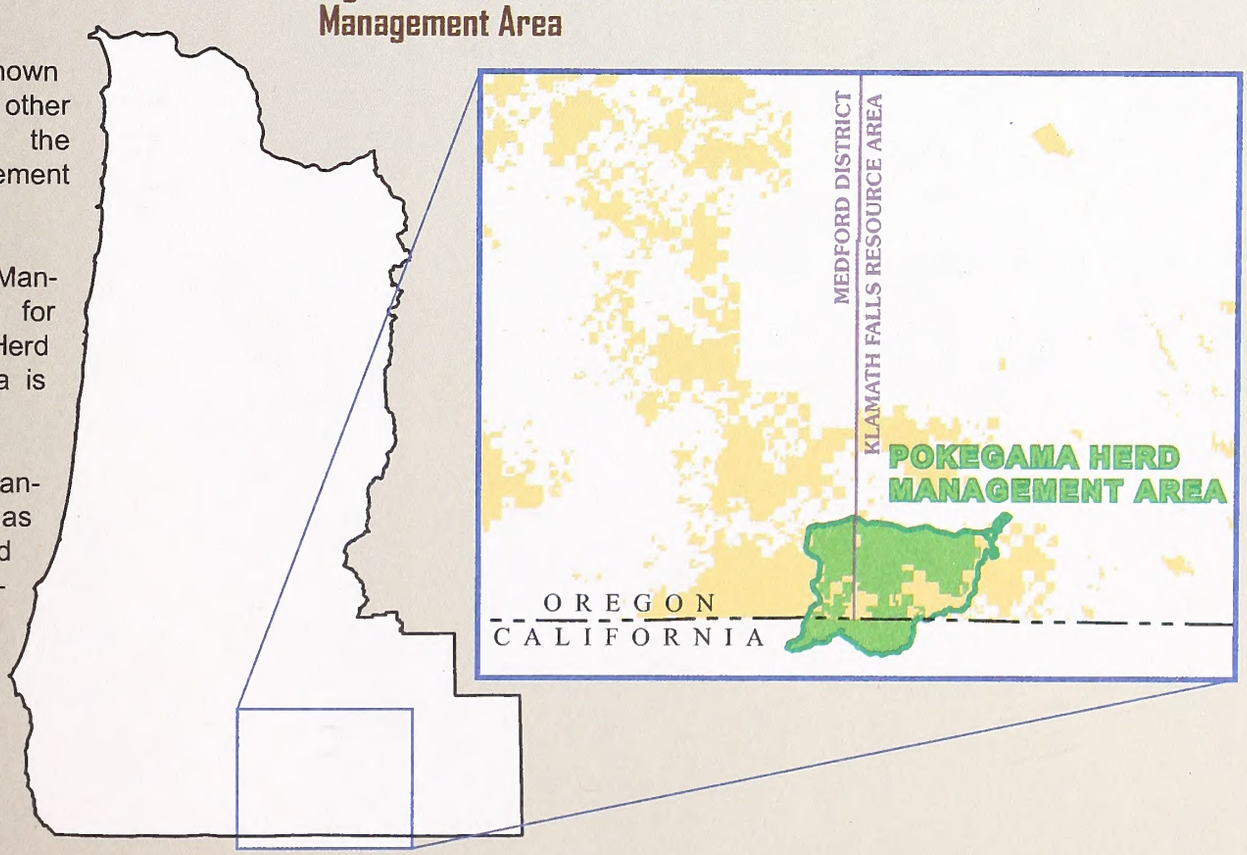
Wild Horses and Burros

Current Condition and Context

- The Pokegama Herd Management Area is the only herd management in the planning area.
- The Pokegama Herd Management Area encompasses a total of 80,875 acres of which 67,869 acres consisting of public, private and State land lie within the planning area.
- Approximately 15,775 acres (11,980 O&C, 3,795 Public Domain) of the herd management area are administered by the Klamath Falls Field Office.
- See Figure 73, Location of Wild Horse and Burro Herd Management Area
- Management of the Pokegama Herd Management Area is in accordance with the Wild Free-Roaming Horse and Burro Act of 1971. Management is designed to achieve and maintain a thriving natural ecological balance on the public lands.
- There are no known conflicts with other resources within the Herd Management Area.
- The Appropriate Management Level for the Pokegama Herd Management Area is 30-50 head.
- The Appropriate Management Level has been maintained through two captures that were completed in 1996 and 2000.

Horses in the Pokegama Herd

Figure 73 – Location of Wild Horse and Burro Herd Management Area



Special Areas

Key Points

- Current management direction is effective in achieving desired outcomes for special areas.
- The plan revisions will provide an opportunity to add new, revise, or remove existing Areas of Critical Environmental Concern

Special Areas

Current Condition and Context

Areas identified as needing management attention above and beyond general stewardship of the lands are Special Management Areas. Areas of Critical Environmental Concern are used by the Bureau of Land Management to designate special management that is required to protect important natural, cultural, scenic resources, and to identify natural hazards.

- ACEC designations include Research Natural Areas, Outstanding Natural Areas, Environmental Education Areas, and Natural Hazard Areas.
- There are 109 Areas of Critical Environmental Concern currently designated in the western Oregon districts' RMPs. This designation includes 33 Research Natural Areas, 7 Outstanding Natural Areas, 8 Environmental Education Areas and 1 Natural Hazard Area.

Special area management actions to preserve, protect or restore relevant and important values are being implemented. RMP allocations, constraints, and mitigation measures appear to be effective in achieving the desired outcomes for the designations. Table 20 shows the number of existing Special Management Areas by District.

Management Opportunities

Areas of Critical Environmental Concern

- Designation highlights areas where Special management attention is needed to protect important values

Research Natural Areas

- Preserve natural ecosystems for comparison with areas influenced by human
- Areas for ecological and environmental studies
- Preserve gene pools of typical and endangered plants and animals

Outstanding Natural Areas

- Protect natural features for compatible recreational purposes

Environmental Education Areas

- Protect natural features for educational purposes

Natural Hazard Areas

- Areas with natural hazards

The plan revision provides an opportunity to re-evaluate existing ACECs to:

- Determine if they still meet the criteria of relevance and importance.
- Determine if a designation is still necessary for special management to protect the features for which areas have been designated.
- Determine if modifications such as boundary changes, addition and deletions of acreage, and type of designation are needed.

Certain areas were nominated for designation as Areas of Critical Environmental Concern by the public late in the previous RMP process. Many of these areas were found to meet important and relevant criteria, however, they were not able to be designated in the RMP because of the lateness in the process. They have since been protected under interim management (Table 22). These areas will be reconsidered during this plan revision. In addition, new nominations

Table 20 – Existing Special Management Areas by District

District	ACEC only	EEA	RNA	ONA	NHA	Total Number	Total Acres
Coos Bay	10	1	1	0	[illegible]	11	18,128
Eugene	7	1	[illegible]	1	1	15	2,852
Klamath Falls	4	2	1	0	0	7	12,738
Medford	16	4	11	1	0	32	17,825
Roseburg	10	0	7	0	0	15	11,817
Salem	13	1	8	6	0	28	8,816
Total	60	8	33	7	1	108	72,176

Table 21 – Special Management Area Plans Completed by District

District	Plans Completed		
	ACEC	RNA	ONA
Coos Bay	7	1	N/A
Eugene	1	5	N/A
Klamath Falls	2	0	N/A
Medford	1	4	0
Roseburg	2	5	N/A
Salem	10	7	4

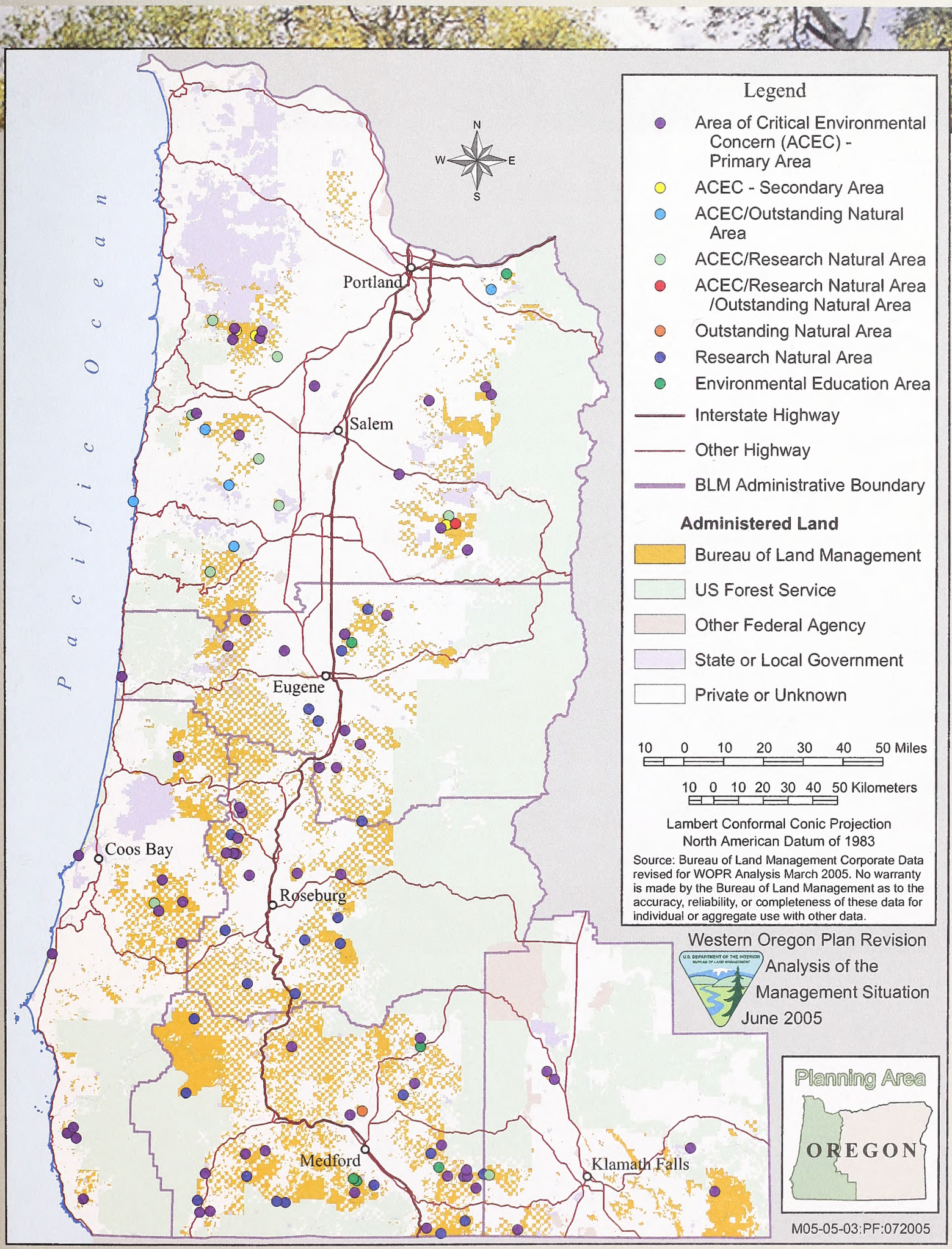
Table 22 – Previously Nominated Special Management Areas under Interim Management

District	ACECs	EEAs	RNAs	ONAs	NHAs
Coos Bay	0	0	0	0	0
Eugene	3	1	0	0	0
Klamath Falls	2	0	0	0	0
Medford	2	4	0	1	0
Roseburg	0	0	0	0	0
Salem	2	1	1	0	0

are periodically received by the districts. There will be an opportunity for public nominations during this revision. These nominations will be evaluated to determine if they meet the criteria of relevance and importance.

- The 2003 Oregon Natural Heritage Plan will be evaluated for potential ecological cells (unique ecosystem types used to inventory, classify, and evaluate natural areas) on BLM administered land that could qualify as potential Areas of Critical Environmental Concern/ Research Natural Areas.

Map 12 displays the distribution of existing and potential ACECs across western Oregon by district.



Map 12: Special Management Areas in Western Oregon

Cultural and Paleontological Resources

Key Points

- Public and tribal demand for cultural heritage information and participatory activities is increasing.
- Looting and vandalism of sites continues to impact cultural values.
- Proactively identifying significant landforms and ecological sites and preparing cultural resource management plans could increase program efficiency in managing cultural resources.

Cultural and Palentological Resources

Current Condition and Context

Oregon's central valleys (Willamette, Umpqua and Rogue River valleys) and coast has seen substantial historic settlement and infrastructure development which has adversely affected preservation of prehistoric cultural resources on private land. Cultural resources on federal land have been subject to less development and have received various levels of purposive protection. In some cases, these resources represent the only intact sites or some of only a few intact sites within a watershed.

There are seven federally recognized tribes in Oregon that have interests, including cultural values & interests, found on BLM lands within the Planning Area. Two have treaties, and at least two have received BLM land transfers from within this Region.

BLM manages historic resources reflective of historic upland and forested land uses such as logging, mining and subsistence homesteading. While not unique in managing these sites, BLM lands contain a specific set of historic resources complementary to those under Forest Service, state and private management.

Identified cultural sites are evaluated and managed according to two different sets of criteria, National Register of Historic Places eligibility and BLM management use categories.

With the exception of those found to be eligible for listing or those being managed as if eligible for the National Register of Historic Places, prehistoric and historic sites do not require a high degree of protection from ground disturbing activities.

Paleontological sites are uncommon in the RMP area when compared to other areas such as Eastern Oregon.

Lithic scatters account for the majority of the sites in the planning area. Other categories of prehistoric sites recorded in the planning area include:

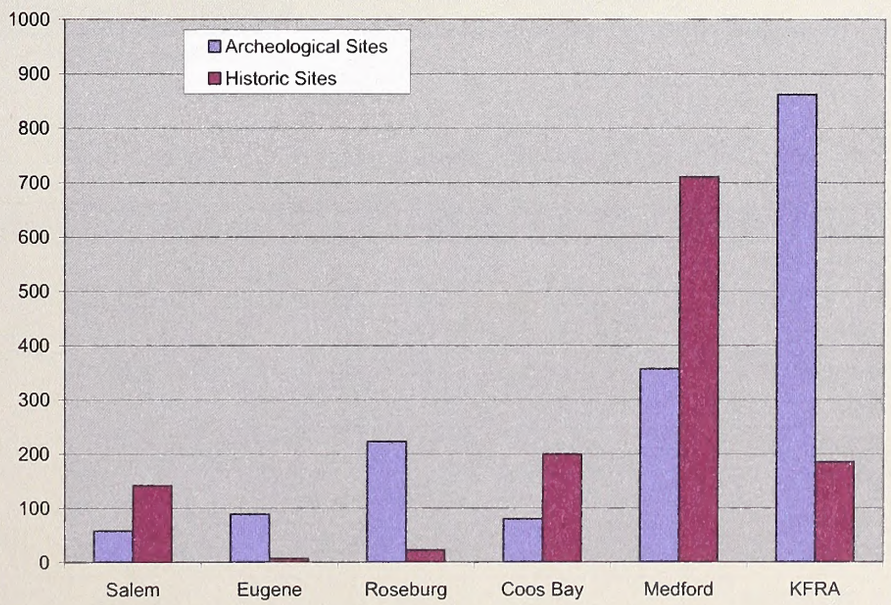
- Rock shelters, middens, middens with structural features, rock art, rock features, lithic quarries, house pits, and peeled trees.
- Human burial sites (These are rare and may occur as individual sites or as features within larger sites such as middens or housepit villages.)
- Stacked rock hunting blinds and rock ring villages (Stacked rock cairns in the KFRA are often associated with Native American vision quests.)

Historic sites within the planning area are predominantly associated with the following activities:

- Homesteading/Ranching/Settlement.
- Logging, Fire Suppression.
- Mining.
- Subsistence Living.
- Government Management of the Land.

Figure 74 shows cultural resource sites by district.

Figure 74 - Cultural Resource Sites by District



In the Coast Range mountains, steep slopes and heavy vegetation are factors limiting prehistoric human use and current efforts to locate sites. Few cultural resource discoveries have resulted from pre-action inventories. Consequently, the BLM districts do not routinely conduct cultural resource surveys in advance of surface disturbing activities on lands in the Coast Range (Table 23).

Looting/Vandalism

Looting or unauthorized excavation is a major concern in the protection of cultural resource sites. Most incidences of looting are occurring at prehistoric sites; however, historic sites also have been damaged by collectors.

The Medford District has a high incidence of site looting, including digging at a historic graveyard. Each year on average, Medford district staff monitors 70 cultural resource sites for evidence of vandalism and submits 25 – 30 incidents of cultural resource site vandalism to Law Enforcement for action. Approximately 194 sites, representing18% of all Medford district sites, have received some form of vandalism.

Heritage outreach is a growing demand:

- In May of 2004, the Salem district printed the brochure, Oregon Archaeology: Getting There from Here, in partnership with the Oregon Archaeology Celebration subcommittee. Two thousand brochures have been distributed upon direct request.
- The Oregon BLM archaeology project, Exploring Oregon's Past: A Teacher's Activity Guide for Fourth through Seventh Grades, was first developed and printed in 1993. It is currently in its fifth printing with over 1200 distributed by request.
- In response to public demand, Yaquina Head Outstanding Natural Area added

Student Atlatl and Dart throwing Activity - Salem District Arboretum, April 2005

Table 23 – Cultural Resources Sites and Inventory by District

Districts	Coos Bay	Eugene	Klamath Falls	Medford	Roseburg	Salem
Number of Archaeological Sites	80	89	862	357	223	58
Number of Historic Sites	Several hundred	7	185	711	23	142
Eligible for NRHP	several	2	*	130	45	7
Listed on NRHP	1	0	0	26	2	4
% of District Inventoried	10	4	50	7	15	25
Paleontological Sites	19		Isolated finds	2	18	6

* Formal Designations have not been made.

lighthouse history programs to the activities available at the site. In 2004, 78,366 visitors took part in a lighthouse history lecture.

Trends and Forecast

The discovery of additional cultural and paleontological sites is anticipated to continue as additional inventories are conducted. Prior to 1998, 1,981 sites were recorded within the planning area. For the fiscal years 1998 through 2004, 956 new sites were recorded.

An increase in recreational opportunities in the planning area has the potential for increased looting and vandalism as well as accidental disturbance to cultural resources.

Federal land management agencies are experiencing a growing demand for heritage tourism, heritage interpretation and volunteer participation opportunities.

- Between 1999 and 2004, there was a 42% increase in public participation in the "Interpretation, Education and Nature Study" category which includes Heritage Resource interpretation and education.
- Between 1987 and 2002, there has been a 22% increase in public participation in the "Driving for Pleasure" recreation activity in western Oregon's Back Country Byways. These corridors are designated for their high scenic, historic and archeological as well as other public-interest values.
- Between 1997 and 2004, Salem district received a 500% increase in school requests (from 7 requests to 35) for cultural resources presentations or portable exhibits.
- In 1993, 12 teachers completed an Exploring Oregon's Past workshop. In 2004, 70 teachers completed the training program.

Management Opportunities

Develop Memoranda of Understanding with federally recognized Indian tribes and other Indian groups to provide for appropriate consideration of their heritage and religious concerns.

Provide for proactive site inventories on high probability landscape features in order that cultural resource site presence and significance can be taken into account early in project planning.

Prepare Cultural Resource Management Plans for areas with fragile resources or intensive prehistoric use in order to provide better protection to the sites and prioritize funding.

Lands and Roads

Key Points

- Two recent public laws will affect how BLM manages land tenure zones and acquisition priorities within the planning area.
- The access and transportation right-of-way program is the most active lands and realty function for the BLM in western Oregon.
- The BLM is responsible for management of over 14,000 miles of road in western Oregon whose primary purpose is the transportation of timber.

Lands and Roads

Current Condition and Context

Lands

Land Tenure

BLM-administered lands within the planning area are identified in one of three land tenure zones.

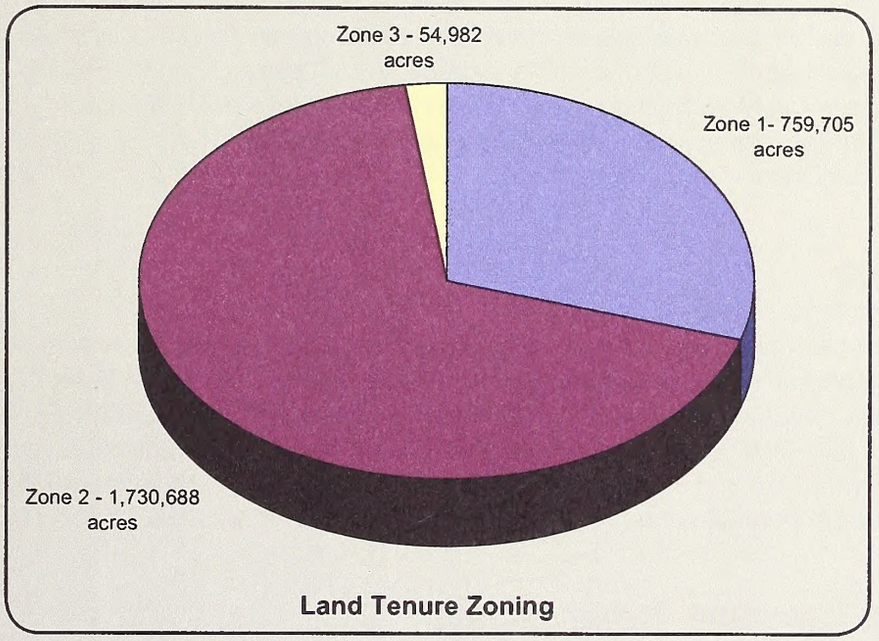
- Zone 1 - Retention and acquisition zone.
- Zone 2 - Exchange and consolidation zone.
- Zone 3 - Disposal zone.

The current acreage distribution by land tenure zone is shown below in Figure 75.

Within the planning area, the BLM acquired approximately 17,913 acres of land and disposed of approximately 15,648 acres through a variety of land tenure adjustment actions, including land sales, exchanges, acquisitions, transfer, etc. (See Table 24.) The majority of land tenure activity was directed through federal legislation, including establishment of the Coquille Forest (5409 acres), Longview Fiber Land Exchange (1453 acres), Rogue National Forest interchange (3018 acres) and the Merlin Landfill transfer (317 acres). Approximately 10,273 acres of Public Domain lands were re-designated at the direction of Congress to either O&C or Coos Bay Wagon Road lands status to make up for losses in acreage and timber revenue from those lands resulting from legislative action.

The Cascade-Siskiyou National Monument, located in the Medford district, was established by Presidential proclamation on June 9, 2000. The Monument encompasses approximately 52,947 acres of BLM-administered land, including 40,156 acres of O&C status lands. The proclamation did not change the O&C status of the land, but did remove the federal timber volume within the monument from BLM's sustained yield calculations.

Figure 75 – Acreage of Land Tenure Zones



Acquisitions

Key land acquisitions by the BLM are within the Sandy River/Oregon National Historic Trail project in the Mt. Hood Scenic Corridor, Salem district. More than 1880 acres have been acquired for resource protection and recreational values. Acquisition funds are provided through annual appropriations from the Land and Water Conservation Fund.

Table 24 – Land Tenure Adjustments (1994-2005)

Acquisition Method	Acres Acquired	Disposal Method	Acres Disposed
Purchase	3976	Exchange	7367
Exchange	13,807	Transfer	5861
Donation	130	Sale	2275
		In-lieu Selection	145
Total	**17,913**		**15,648**
Acres redesignated from Public Domain to O&C lands			**7543**
Acres redesignated from Public Domain to Coos Bay Wagon Road lands			**2730**

Land Exchanges

Land exchanges have been of limited use as a land tenure adjustment tool because they have become extremely controversial and difficult to complete. BLM policy is now to de-emphasize land exchanges and to perform land sales and acquisitions under the Federal Land Transaction and Facilitation Act of 2000.

Sales

There have been a small number of public lands sale, primarily to resolve unintentional occupancy trespass or to dispose of small tracts created by survey hiatus. Plan amendments were approved for the Klamath Falls field office RMP (1998), Eugene district RMP (1998), and Medford district RMP (2002) to facilitate land disposal actions. There is a continued public interest in purchasing isolated tracts of public lands in western Oregon.

New Laws and Requirements

Two recent public land laws which affect the BLM's land tenure program were enacted following adoption of the resource management plans in 1995.

The Oregon Public Lands Transfer and Protection Act, Public Law 105-321, dated October 23, 1998, established "No-Net-Loss" requirements for lands administered by the BLM in western Oregon. The Act applies only to discretionary agency actions involving sale, purchase, or exchange of land. The Act requires monitoring of changes in land and harvestable timber acres and balancing every ten years. To date, western Oregon BLM shows a surplus of 50 acres of O&C land and a deficit of 63 acres in harvestable timberland. There has been a decline of sales and exchanges involving Oregon and California Railroad and Coos Bay Wagon Road (CBWR) lands since the enactment of this law (Table 25).

The Federal Land Transaction Facilitation Act (Public Law 106-248), signed into law on July 25, 2000, provides for agency retention of land sale receipts and land exchange equalization payments in a Federal Land Disposal Account for use in purchasing land or interests in lands which contain exceptional resources. Western Oregon BLM has a separate account for Oregon and California Railroad or Coos Bay Wagon Road land revenue for use within the O&C counties of western Oregon. The O&C account has received $1100 in revenue from land sales under this law. A multi-agency regional agreement for implementation of this law is under development.

Access and Transportation Right-of-Way Program

This program is the most active lands and realty function for the BLM field offices in western Oregon. Administration of reciprocal right-of-way agreements continues to be the predominant use authorization activity in all districts. Transfers of private timberland have increased BLM's workload for various types of right-of-way actions, including amendments, crossing plat review, and permit assignments.

The BLM continues efforts to obtain access for timber sales, forest health and restoration projects, and recreation. Forest management needs within the planning area are being met primarily through the O&C logging road right-of-way program. The BLM is experiencing increased difficulty in completing satisfactory easement negotiations with private landowners. There is a significant backlog of pending access work reported by most western Oregon BLM districts, particularly to those tracts of BLM lands which remain in the available timber base. Most landowners are unwilling to grant public access. There have been no condemnation cases initiated by the BLM for access.

There has been a major shift in corporate forestland ownerships within the planning area and related changes in gating of private forest roads. Forestland owners are gating more of their roads as a result of experiencing an increase in vandalism and other resource damage. As a consequence, public access to the intermingled BLM lands has been reduced.

Table 25 – No-Net Loss Summary 1998-2005

O&C Acres		CBWR Acres		Harvestable Timberland Acres	
Acquired	Disposed	Acquired	Disposed	Acquired	Disposed
275	225	0	0	661	724

Energy Development and Transmission

The BLM plays a vital role in managing and facilitating access to energy resources not only through its leasing function but also through the issuance of rights-of-way that authorize private energy producers and transporters to build the necessary infrastructure on public lands to produce or transport energy.

BLM land use plans in western Oregon did not anticipate potential solar and wind energy development. Although opportunities for solar and wind energy development do exist within the planning area, the current level of interest in site testing and monitoring is limited. No applications have been received for development of an energy production facility.

The BLM at the national level is currently working on a Wind Energy Development programmatic environmental impact statement, which will evaluate the issues associated with wind energy development on BLM-administered lands in eleven western states. The programmatic environmental impact statement will support the amendment of individual land use plans to address potential wind energy resource development.

The most significant energy related right-of-way development was the Coos County Natural Gas Pipeline project, which involved the installation of a 12-inch natural gas pipeline over BLM-administered lands in Douglas and Coos counties. The Record of Decision was signed in 2002 and project work was completed in 2004.

The recent revision of utility corridor needs published by the Western Utility Group did not identify additional utility corridors within the planning area. However, there is ongoing interest in the expansion of the regional natural gas transmission and distribution system which include routes over BLM-administered lands.

Communication sites

Existing and future communication site facilities are identified on BLM-administered lands within the planning (Figure 76). A five-year action plan has been implemented for development of communication site management plans and to secure adequate legal access.

Withdrawals and classifications

Activity in the withdrawals program as anticipated in the current RMPs has been limited. Fifteen existing withdrawals have been revoked on approximately 10,283 acres of BLM administered lands within the planning area. Certain withdrawals not identified in the current RMPs are necessary to protect resources from non-discretionary mineral entry.

Approximately 45,117 acres of Oregon and California Railroad and Coos Bay Wagon Road lands are currently classified as water power reserve and are withdrawn from operation of the public land laws. All other Oregon and California Railroad and Coos Bay Wagon Road lands within the planning area are classified as timber lands.

Roads

The BLM controls approximately 14,000 miles of road within the planning area. Approximately 13,000 miles (about 93%) of BLM roads have some form of surfacing (bituminous, aggregate or pit run). The primary purpose for development and use of the BLM road system is the transportation of timber. The majority of the BLM road system is authorized for use by intermingled private forestland owners through reciprocal right-of-way agreements and used for transportation of timber harvested from their lands. Although most BLM roads are not public roads, the BLM road system serves as a means for the public to access public lands for recreational activities where public access rights have been obtained or to provided ingress and egress to residences (Figure 77).

BLM road systems are described by functional classification. The distribution of functional classifications is shown below in Figure 78.

- Collector roads normally provide access to large blocks of public land and connect to state and county road systems.
- Local roads primarily provide access to lands adjacent to the collector network and serves travel over relatively short distances.
- Resource roads are primarily spur roads and provide access for only one or two types of resource management and carry very low traffic volumes.
- Road construction standards and maintenance intensity are generally highest on collector roads and least on resource roads.

Under current RMPs, transportation management direction includes the development of a transportation management plan, road density reduction, and maintenance of the road system to meet the needs of resource programs. A Western Oregon Transportation Management

Figure 76 - Acquired, Public Domain, and O&C Lands, and Communication Sites in the Plan Area

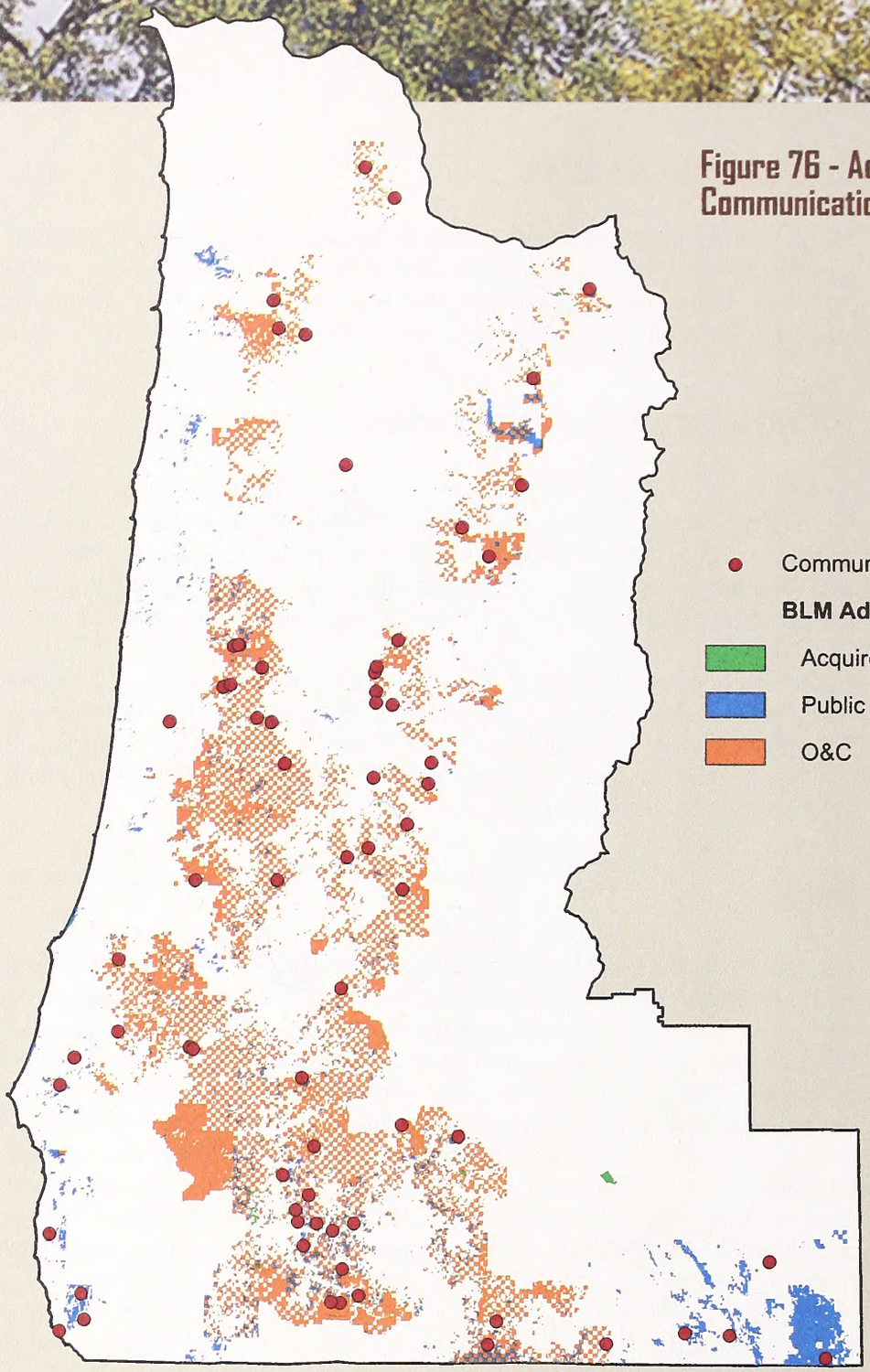


Figure 77 – BLM Access Rights in the JC Boyle Watershed

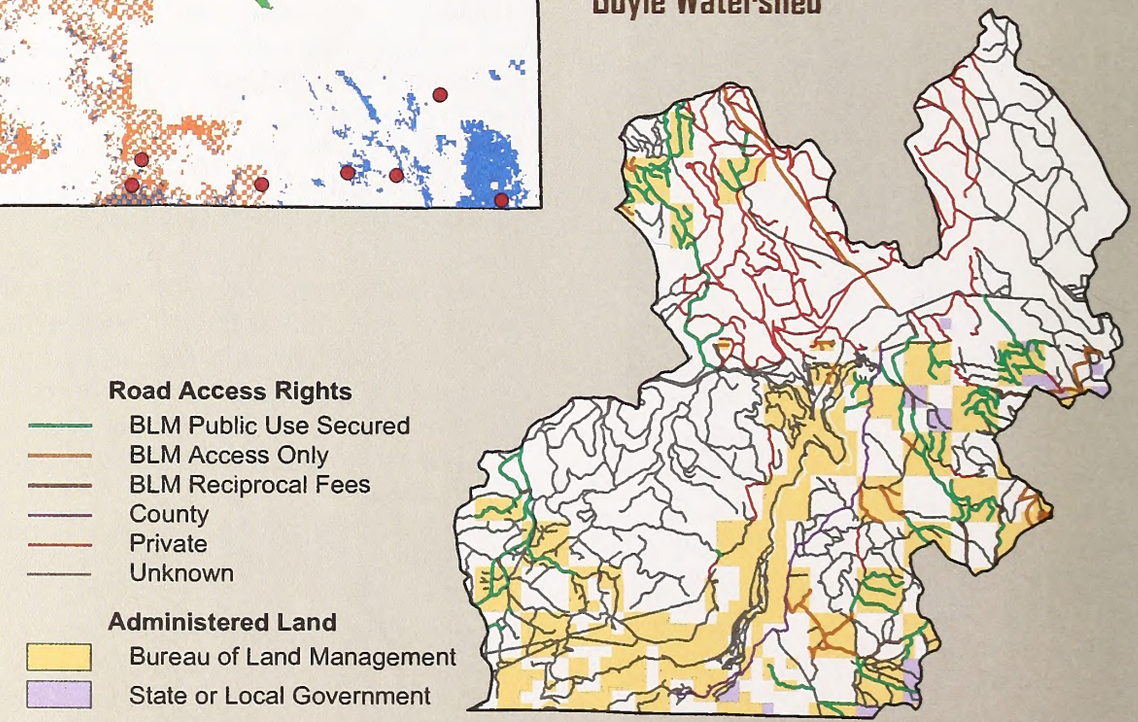
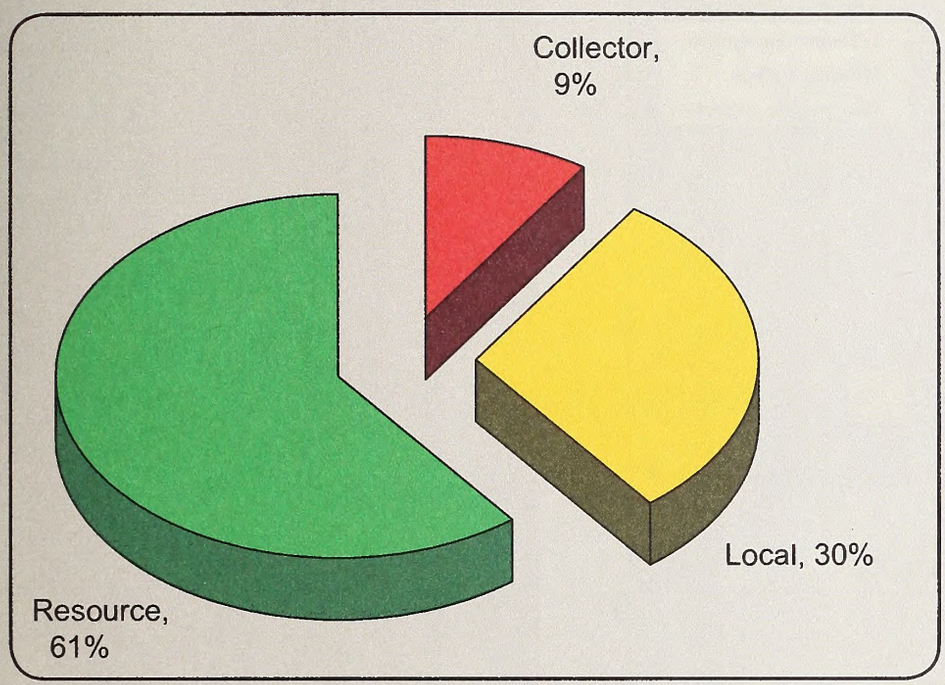


Figure 78 – Distribution of Functional Classification for BLM Roads



Plan was developed in 1996, with a subsequent revision in 2002. The BLM has decommissioned approximately 590 miles of road. An additional 1360 miles of BLM roads are identified for potential road closure. BLM contractual obligations in reciprocal right-of-way agreements preclude a substantial reduction in road mileage within fifth-field watersheds.

- BLM lands in western Oregon (yellow) are intermingled with private forestlands in a checkerboard pattern.
- The forest transportation system is a combination of both BLM roads (in red) and private roads (in gray).
- Access needs are met through reciprocal right-of-way agreements and road easements.

Maintenance

Maintenance of the BLM road system within the planning area follows guidance in the Western Oregon Transportation Management Plan (2002). Each District develops an annual maintenance operating plan which contains a list of roads scheduled to be maintained in the current year. Approximately 25% of BLM's road system (3,800 miles) is scheduled to be maintained in any given year (Figure 80).

Road maintenance activities include:

- Roadside brush removal.
- Road surface grading and replacement.
- Pavement maintenance and replacement.
- Ditch cleaning.
- Culvert cleaning and replacement.
- Slough and slide removal.

Drainage facilities currently under assessment include:

- 350 bridges.
- 500 major culverts (>80" diameter).
- 40,000 minor culverts.

Maintenance levels (or intensity) are assigned to BLM roads using a progressive five-level system. Higher maintenance intensity, or level 4-5, is typically assigned to bituminous surface collector roads. Native surface local roads receive at least level 1-2 maintenance to ensure resource protection. Roads in levels 3 to 5 are maintained on a scheduled basis and may receive more extensive maintenance during periods of short-term increased use for timber hauling.

Figure 79 - Private versus BLM Roads in the JC Boyle Watershed

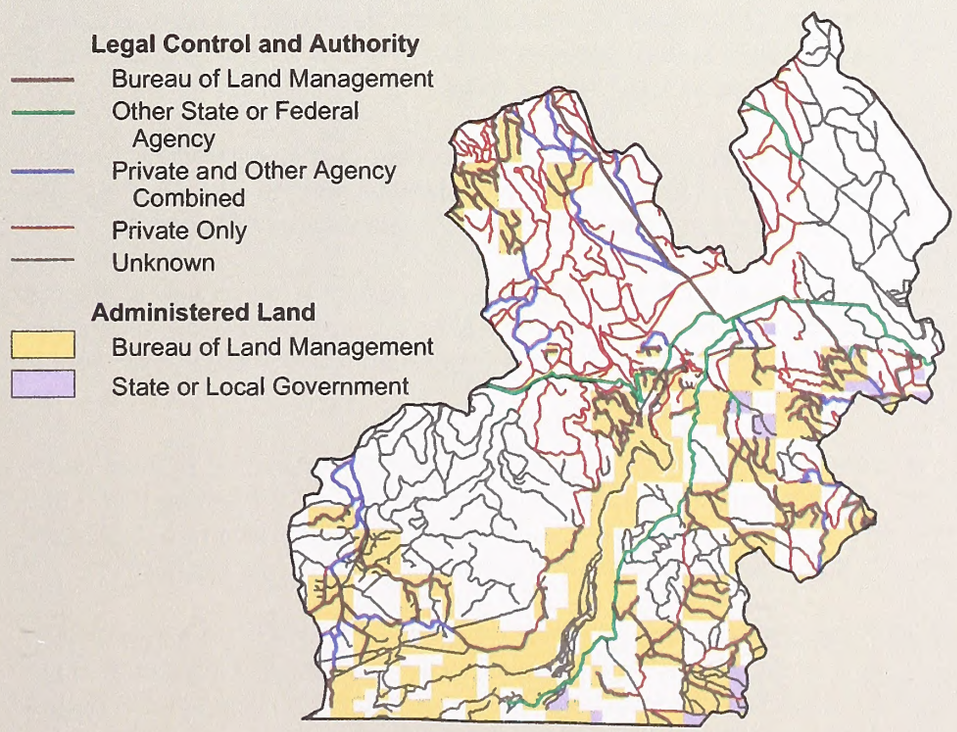
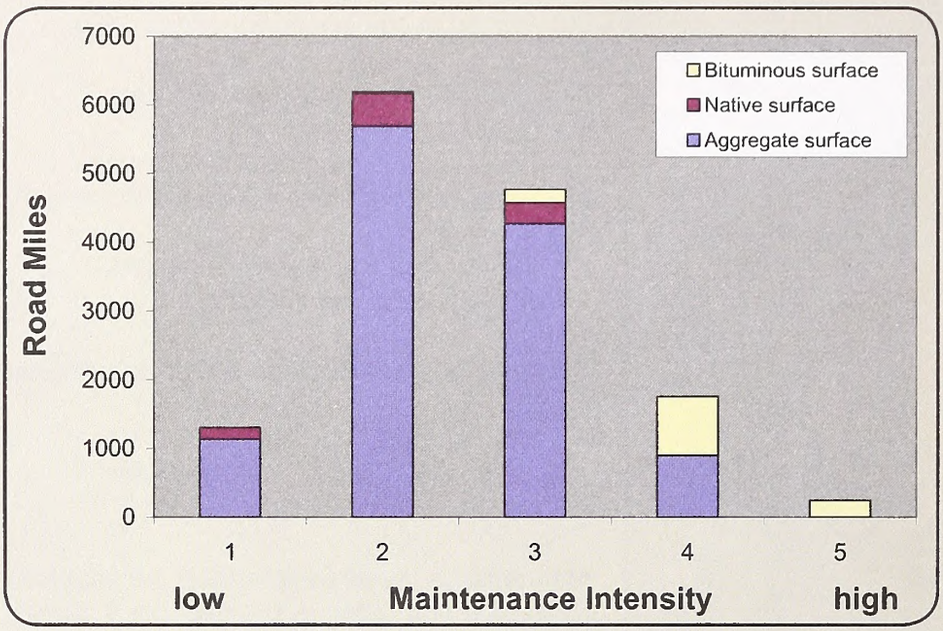


Figure 80 - Miles and Intensity of Road Maintenance



Management Opportunities

- Land tenure adjustment objectives should be reconsidered in light of new legal mandates which prohibit loss of O&C acres and harvestable timberland.
- Address how the no-net-loss requirements will be met.
- Provide for the disposal of public land affected by inadvertent occupancy trespass or isolated tracts discovered to be public land as a result of survey hiatuses through the use of automatic allocation of such lands to Land Tenure Zone 3.
- Address solar or wind energy development and ancillary facility needs (right-of-way corridors) on public lands tiered to the Wind Energy Development programmatic environmental impact statement.
- Revise guidance on objectives for roads in key watersheds as experience indicates that it is not possible to materially reduce the road density in areas where the public lands are subject to reciprocal right-of-way agreements.
- Analyze environment impacts of work included in road maintenance, recreation maintenance, and realty actions in the RMP so that these actions and uses can be implemented with minimum additional National Environmental Policy Act analysis beyond the RMP.
- Analyze the normal and logical use of existing mineral material sites and existing water source developments on public lands in the RMP to facilitate subsequent National Environmental Policy Act analyses for these actions during implementation

Minerals

Minerals

Current Condition and Context

Sporadic small scale placer gold mining and rock quarrying are the main types of mining activity that occurs on BLM lands in the planning area.

The placer gold mining occurs primarily in the Medford district.

The rock quarry development occurs in each BLM district to varying degrees and is primarily done for logging road construction and maintenance. Rock quarry activity has declined significantly over the past 10 to 15 years. In some areas rock sources are becoming scarce or are encumbered by land allocation restrictions.

Neither type of mining activity contributes significantly to the economic base of communities in the planning area.

The activity levels for mining on BLM lands in western Oregon has generally declined slightly. The number of mining claims has decreased since 1990 due to changes in the 3809 regulations resulting in an increase in locating and recording fees.

The only notable leasable mineral activity over the last 10 years has been the issuance of a few oil and gas leases near Mist, Oregon, but all of these leases have recently been dropped.

Production of salable minerals (primarily road rock) from BLM pits has declined dramatically since the 1980s due to the decrease in logging road construction. Currently the salable mineral activity has been limited to a few small sales.

Abandoned mine sites continue to be environmental and physical safety issues.

A Congressionally mandated mineral patent moratorium is still in place. This means that mining claims can continue to be located, and exploration and mining is still allowed, but no mineral patent applications can be accepted nor processed by BLM while the moratorium is in effect.

The RMP evaluations have concluded that the Renewable Energy and Adverse Energy Impact Assessment elements of the RMPs are being implemented.

There is some potential for future coal bed methane lease applications in the Coos Bay area.

Recreational gold mining or panning sites are established in the western Oregon BLM districts but not in the Klamath Falls field office These sites are not managed under the 43 Code of Federal Regulations 3809 Surface Management regulations, but are managed under separate unique guidelines through the recreation program.

Management Opportunities

Designate quarries and stockpiles as administrative facilities and removing any confusion with natural habitat.

Explore the possibility of mineral leases with State Department of Transportation for gravel sources at the state level.

Explore the expansion or development needs of existing rock sources to provide more economical and resource efficient sources rather than hauling commercial sources long distances.

Table 26 – Mining Claims, Notices, Plans, and Mineral Leases on BLM Lands

Office	# Mining Claims	# Mineral Leases	# 3809 Exploration Notices	# 3809 Mining Plans
Medford	638	0	108	0
Roseburg	119	0	27	0
Coos Bay	26	0	1	0
Eugene	36	0	0	0
Salem	9	0	0	0
Klamath Falls	3	0	0	0

United States Department of the Interior
Bureau of Land Management
Oregon State Office
333 S.W. 1st Avenue
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